

Department of Physiology
Harvard School of Public Health
55 Shattuck Street
Boston, Mass.

OFFICIAL REGISTER OF HARVARD UNIVERSITY

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COURSES OF INSTRUCTION
FOR THE YEAR 1948-49

W. H. H. H. H.

OFFICIAL REGISTER OF HARVARD UNIVERSITY


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ANNOUNCEMENT
OF THE
HARVARD SCHOOL OF
PUBLIC HEALTH

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CALENDAR FOR THE ACADEMIC YEAR 1948-49

September 20, Monday to

September 24, Friday.

Registration of students.

FALL TERM September 27, 1948 to February 5, 1949

September 27, Monday.

First period begins.

October 12, Tuesday.

Columbus Day: a holiday.

November 11, Thursday.

Armistice Day: a holiday.

November 20, Saturday.

First period ends.

November 22, Monday.

Second period begins.

November 25, Thursday.

Thanksgiving Day: a holiday.

RECESS FROM DECEMBER 19, 1948 TO JANUARY 2, 1949, INCLUSIVE

January 29, Saturday.

Second period classes end.

January 31, Monday to

February 5, Saturday.

Field work.

SPRING TERM February 7, 1949 to June 23, 1949

February 7, Monday.

Third period begins.

February 22, Tuesday.

Washington's Birthday: a holiday.

April 2, Saturday.

Third period ends.

RECESS FROM APRIL 3 TO APRIL 10, 1949, INCLUSIVE

April 11, Monday.

Fourth period begins.

April 19, Tuesday.

Patriot's Day: a holiday.

May 30, Monday.

Memorial Day: a holiday.

June 4, Saturday.

Fourth period classes end.

June 7, Tuesday and

June 8, Wednesday.

Comprehensive Examination.

June 23, Thursday.

Commencement.

ADMINISTRATIVE OFFICERS

President: JAMES BRYANT CONANT, A.B., PH.D., LL.D., S.D., L.H.D.,
D.C.L., D.Sc.

Office, 1 Massachusetts Hall, Cambridge.

Dean: JAMES STEVENS SIMMONS, S.B., M.D., PH.D., DR.P.H.,
S.D. (hon.).

Office, School of Public Health, 55 Shattuck Street, Boston.

Assistant Dean: HUGO MUENCH, A.B., M.D., DR.P.H., A.M. (hon.).

Office, School of Public Health, 55 Shattuck Street, Boston.

Secretary of the School: MARGARET GUSS BARNABY, A.B.

Office, School of Public Health, 55 Shattuck Street, Boston.

Physician to Students: MYLES PIERCE BAKER, M.D.

Office, Room 103, Building A, Harvard Medical School,
25 Shattuck Street, Boston.

Bursar: ROY VINCELLE PERRY.

Office, Lehman Hall, Cambridge.

FACULTY OF PUBLIC HEALTH *

- JAMES BRYANT CONANT, A.B., Ph.D., LL.D., S.D., L.H.D., D.C.L., D.Sc., *President*.
- JAMES STEVENS SIMMONS, S.B., M.D., Ph.D., DR.P.H., S.D. (hon.), *Dean and Professor of Public Health*.
- HUGO MUENCH, A.B., M.D., DR.P.H., A.M. (hon.), *Assistant Dean and Professor of Biostatistics*.
- ALICE HAMILTON, M.D., A.M., S.D., *Assistant Professor of Industrial Medicine, Emeritus*.
- FREDERICK FULLER RUSSELL, M.D., S.D. (hon.), *Professor of Preventive Medicine and Epidemiology, Emeritus*.
- ERNEST EDWARD TYZZER, Ph.B., A.M., M.D., S.D. (hon.), *George Fabyan Professor of Comparative Pathology, Emeritus and Professor of Tropical Medicine, Emeritus*.
- EDWIN BIDWELL WILSON, A.B., Ph.D., *Professor of Vital Statistics, Emeritus*.
- RICHARD MASON SMITH, A.B., M.D., S.D. (hon.), *Thomas Morgan Rotch Professor of Pediatrics, Emeritus*.
- GEORGE CHEEVER SHATTUCK, A.B., M.D., A.M. (hon.), *Clinical Professor of Tropical Medicine, Emeritus*.
- MELVILLE CONLEY WHIPPLE, A.M. (hon.), *Associate Professor of Sanitary Chemistry*.
- CONRAD WESSELHOEFT, M.D., *Clinical Professor of Infectious Diseases*.
- CHARLES WALTER CLARKE, A.B., A.M., M.B.Ch.B., *Clinical Professor of Public Health Practice*.
- HAROLD COE STUART, Litt.B., M.D., A.M. (hon.), *Professor of Maternal and Child Health*.
- PHILIP DRINKER, S.B., Chem.E., S.D. (hon.), LL.D., A.M. (hon.), *Professor of Industrial Hygiene*.
- BERTHA SHAPLEY BURKE, A.B., A.M., *Assistant Professor of Maternal and Child Nutrition*.

* Arranged, with the exception of the President and Deans, on the basis of collegiate seniority.

GORDON MASKEW FAIR, S.B., S.M., *Abbot and James Lawrence Professor of Engineering and Gordon McKay Professor of Sanitary Engineering.*

JOHN EVERETT GORDON, S.B., PH.D., M.D., A.M. (hon.), *Professor of Preventive Medicine and Epidemiology.*

CONSTANTIN PRODROMOS YAGLOU, B.A., S.B., M.M.E., *Professor of Industrial Hygiene.*

FRANZ GOLDMANN, M.D., *Associate Professor of Medical Care.*

CARL RUPP DOERING, A.B., M.D., S.D., *Assistant Professor of Biostatistics.*

ELIZABETH PRINCE RICE, A.B., S.M., *Assistant Professor of Medical Social Work.*

ROSS ARMSTRONG MCFARLAND, A.B., Ph.D., S.D. (hon.) *Assistant Professor of Industrial Hygiene.*

HUGH RODMAN LEAVELL, S.B., M.D., Dr.P.H., *Professor of Public Health Practice.*

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ABRAHAM DANIEL RUBENSTEIN, A.B., M.D., M.P.H., *Assistant Professor of Epidemiology.*

EDWARD WARREN MOORE, A.B., A.M., *Associate Professor of Sanitary Chemistry.*

THEODORE HUNT INGALLS, A.B., M.D., *Assistant Professor of Epidemiology.*

HELEN LUCILE ROBERTS, A.B., M.D., M.P.H., *Associate in Public Health Practice.*

EDWARD STEVENSON MURRAY, A.B., M.D., *Assistant Professor of Public Health Bacteriology.*

JANE WORCESTER, A.B., Dr.P.H., *Assistant Professor of Biostatistics.*

FREDRICK JOHN STARE, S.M., Ph.D., M.D., *Professor of Nutrition.*

VLADO ANDREW GETTING, A.B., M.D., Dr.P.H., *Clinical Professor of Public Health Practice.*

JOHN CRAYTON SNYDER, A.B., M.D., *Professor of Public Health Bacteriology.*

GEOFFREY EDSALL, M.D., *Assistant Professor of Public Health Bacteriology.*

JOHN CARRELL MORRIS, S.B., A.M., Ph.D., *Assistant Professor of Sanitary Chemistry.*

ALBERT OTTO SEELER, A.B., M.D., *Assistant Professor of Industrial Medicine.*

HAROLD ALLEN THOMAS, JR., S.B., S.M., S.D., *Associate Professor of Sanitary Engineering.*

SHIH LU CHANG, M.D., Dr.P.H., *Assistant Professor of Sanitary Biology.*

STUART SHELTON STEVENSON, A.B., M.D., M.P.H., *Assistant Professor of Child Health.*

LESLIE SILVERMAN, S.B., S.M., S.D., *Associate Professor of Industrial Hygiene.*

DAVID MARK HEGSTED, S.B., S.M., Ph.D., *Associate Professor of Nutrition.*

JAMES LAVERRE WHITTENBERGER, S.B., M.D., *Assistant Professor of Physiology.*

ROBERT VALENTINE REED, A.B., A.M., Ph.D., *Associate in Biostatistics.*

The names of the other officers of instruction are given in their respective departments as listed under Content of the Courses, pages 30-59.

ADMINISTRATIVE BOARD

JAMES B. CONANT, President (*ex officio*).

JAMES S. SIMMONS, Dean.

HUGO MUENCH, Assistant Dean.

PHILIP DRINKER.

GORDON M. FAIR.

JOHN E. GORDON.

HUGH R. LEAVELL.

JOHN C. SNYDER.

FREDRICK J. STARE.

HAROLD C. STUART.

JAMES L. WHITTENBERGER.

STUART S. STEVENSON, Secretary to the Board.

COMMITTEES OF THE FACULTY

Committee on Admissions

HUGO MUENCH, Chairman; FRANZ GOLDMANN, JOHN C. SNYDER,
STUART S. STEVENSON.

Committee on Examinations

HUGH R. LEAVELL, Chairman; CARL R. DOERING, LESLIE SILVERMAN,
FREDRICK J. STARE.

Committee on Curriculum

JOHN E. GORDON, Chairman; DAVID M. HEGSTED, EDWARD W. MOORE,
HAROLD C. STUART, JANE WORCESTER.

THE COMMITTEE APPOINTED BY THE BOARD OF OVERSEERS TO VISIT THE SCHOOL OF PUBLIC HEALTH

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ROBERT AMORY
CHARLES W. GILKEY
CHARLES H. BABCOCK
WILLIAM BELL
S. BRUCE BLACK
THOMAS D. CABOT
GEORGE B. DARLING
MARTHA M. ELIOT

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EMORY W. MORRIS
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THOMAS PARRAN
JAMES H. RAND, JR.
ANDREW J. WARREN
CHARLES F. WILINSKY
HUNTINGTON WILLIAMS

HISTORICAL STATEMENT

THE HARVARD SCHOOL OF PUBLIC HEALTH first gave instruction to students in the academic year 1922-23. Activity in professional education in public health had been steadily increasing in Harvard University over a period of more than two decades before the actual founding of the School as a result of the influence of Dr. Henry P. Walcott, for many years senior Fellow of the Harvard Corporation, himself an internationally known pioneer in the field of public health. This trend was a gradual development, but was characterized by certain important steps, the first of which was the establishment in 1909 of the Department of Preventive Medicine and Hygiene in the Medical School,—the first such department in the United States. The degree of Doctor of Public Health was first conferred in 1911. In this same year a Department of Sanitary Engineering was inaugurated in the Graduate School of Engineering. In 1913 the Department of Tropical Medicine, and in 1918 the Division of Industrial Hygiene, with clinical and laboratory facilities, were organized in the Harvard Medical School.

In 1913 the "Harvard-Technology" School of Public Health was organized, under the joint management of Harvard University and the Massachusetts Institute of Technology. This School operated until the fall of 1922, when it was superseded by the new Harvard School of Public Health which was made possible by a generous endowment for this purpose from the Rockefeller Foundation. This endowment is most appropriately known as the Henry P. Walcott Fund of Harvard University.

Besides the Walcott Fund, the Rockefeller Foundation at this time also presented the School with sufficient funds to purchase and equip a building standing on land adjacent to that occupied by the Medical School, the Children's Hospital and the Peter Bent Brigham Hospital in which to house the administrative offices and as many as possible of the various groups concerned with instruction and research in public health. It was impossible to provide space in the new School of Public Health building for such departments as Bacteriology, Pre-

ventive Medicine and Hygiene, Tropical Medicine, Parasitology and the Library, all of which had existed in the Medical School for some years. For this reason, as well as to avoid duplication in facilities, the departments named above were organized as joint departments, supported financially by both the School of Public Health and the Medical School. There was a similar joint arrangement between the Graduate School of Engineering and the School of Public Health in respect to Sanitary Engineering. The departments which were entirely supported by the School of Public Health: Vital Statistics, Maternal and Child Health, Public Health Administration, Physiology and Industrial Hygiene, were either housed in the School of Public Health building or in quarters rented by the School.

In 1946, the Rockefeller Foundation made an additional grant to the School of Public Health of funds to be expended during the succeeding ten years. To provide additional space for the School, the Collis P. Huntington Memorial Hospital Building, located at Huntington Avenue and Shattuck Street, was made available. On July 1, 1946, the School of Public Health was separated administratively from the Medical School and became independent in respect to budgets and faculty appointments. The School continues to cooperate closely with the Medical School in teaching and research as it does with the School of Engineering and other Schools of the University.

GENERAL STATEMENT

PROGRAMS OF STUDY

The programs of study in the School of Public Health are based on the principle that a thorough training in the disciplines of the science of public health is essential to the success of the individual who practices or teaches public health, or who engages in research in this field. The School does not seek to train expert technicians for particular branches of departments of public health, although much of the instruction incidentally does familiarize students with many specialized public health problems. The primary purpose of the

School is to provide a better understanding of the nature and broad significance of public health, and of the specialties within this field, so that students may prepare themselves for careers as public health administrators, teachers, or research workers.

Programs of study are adapted to the needs of individual students. Special students, who are not candidates for degrees, who seek to prepare for work in a particular field, may concentrate in the broad field of problems in which their major interest lies. Those who complete the requirements for a first degree in public health with honor may devote most of their time to research directed toward the preparation of doctoral dissertations. These students may supplement and round out their previous graduate training through registering for courses offered in the other schools and departments of instruction in the University.

FACILITIES

The School of Public Health is located mainly in two buildings, one at 55 Shattuck Street, Boston, which houses the administrative offices and five departments, the other at 695 Huntington Avenue, Boston, where three departments are located. Both of these buildings are in close proximity to the Medical School, the School of Dental Medicine, the Peter Bent Brigham Hospital, the Children's Hospital, and the Lying-in Hospital. The Biologic Laboratories of the Massachusetts Department of Public Health are within a comparatively short distance of the School. There is a cooperative arrangement with the Medical School so that all the facilities of either School and of the hospitals are fully available to the students of both schools. In Cambridge the graduate departments of the University offer opportunities for work in certain fields of special interest to public health students. For example, students may elect courses in sociology, business administration, the theory of government, common law, sanitary engineering and other subjects.

Several types of well organized public health activities lie within a short distance of the School. Close affiliation is maintained between the School and the Massachusetts Department of Public Health, thus

assuring students an opportunity not only to observe but actually to participate under competent direction in state health department activities. The Health Departments of the City of Newton and of the Town of Brookline, whose Directors of Health are on the teaching staff of the School, have been developed as special training grounds for students of local public health administration in all its phases.

The facilities of the hospitals and clinics of the Massachusetts Department of Public Health and of other official agencies, as well as those of the various semi-official agencies, are available for field training in child health, tuberculosis control, treatment of contagious diseases of childhood, care of mental defectives, rehabilitation of crippled children, correction of dental defects, and other types of activity which relate directly to the promotion of health and social welfare. Opportunity is also offered for training in organization and administration of medical care programs and in hospital organization and community relationships. Boston being the center of a great industrial metropolitan area, students have opportunity to observe at first hand all the public health problems that large industrial populations must face.

Libraries

The joint Library of the School of Public Health and the Harvard Medical School is on the second floor of the Administration Building of the Medical School. It is open from 9 A.M. until 10 P.M. on week days, from 9 A.M. until 5 P.M. on Saturdays, and from 2 P.M. until 6 P.M. on Sundays. There are at present 91,000 volumes, 201,000 pamphlets, and 872 current periodicals on file in this library.

Students also have the privilege of using the College Library in Cambridge, as well as the various departmental libraries belonging to the University, in all of which there are 3,945,318 volumes and pamphlets.

The Boston Public Library is open to students who are residents of Boston, and to students not residents of Boston who have filed a bond at the Bursar's Office.

The Boston Medical Library, No. 8 The Fenway, contains about

200,000 bound volumes, 140,000 pamphlets, and 723 current periodicals on file. For those who desire to consult medical literature, this very valuable library is open on week days from 9 A.M. to 5 P.M., Saturdays 9 A.M. to 1 P.M., and on Mondays and Thursdays until 9 P.M., from the middle of October to the end of May.

REQUIREMENTS FOR ADMISSION AND FOR DEGREES

Men or women who apply for admission to the School must satisfy the Committee on Admissions of their academic fitness. The record of courses completed as described in the application for admission is not in itself sufficient evidence of the fitness of a prospective candidate. The Committee may require additional evidence of present ability to utilize the training received and to profit by the courses administered by the School. The right is reserved to reject any applicant, or to accept an applicant as a special student rather than as a candidate for a degree until he demonstrates his ability to perform satisfactorily the work of the School.

All inquiries and communications regarding admission should be addressed to the Secretary, Harvard School of Public Health, 55 Shattuck Street, Boston 15, Massachusetts.

MASTER OF PUBLIC HEALTH

Requirements for Admission

The course leading to the degree of Master of Public Health is designed primarily for graduates in medicine, but it is also appropriate for doctors of dental or veterinary medicine and for public health workers who have received acceptable training or experience in public health practice. Each applicant must convince the Committee on Admissions that he is prepared to complete the course with distinction.

Applicants for this degree must belong to one of the following categories:

1. Graduates of acceptable schools of medicine, veterinary medicine or dentistry.

2. Graduates in arts or sciences with adequate training in the basic medical sciences, who have completed either
 - a. One academic year of acceptable graduate work in a public health field, *or*
 - b. Three years of acceptable full-time experience in a responsible position in public health practice.

Requirements for the Degree

1. One academic year, consisting of two sixteen-week terms, must be spent in residence at the University.

2. The student must complete forty credit units with distinction. He may elect a larger number of courses but the program of work he desires to pursue must meet the approval of the Administrative Board. It is expected that candidates for the degree will take the basic courses in the fields of administration, statistics, sanitation and epidemiology, unless they can demonstrate equivalent preparation.

The courses of the curriculum are listed below, with the credit unit value for each course listed. These values indicate the approximate proportion of the student's total program the course is intended to occupy.

3. At the end of the academic year a comprehensive examination is given which is designed to test the student's knowledge and judgment, and his ability to coordinate the basic public health subjects of administration, epidemiology, sanitation and statistics, and also the various specialties in the field of public health. In order to be recommended for the degree of Master of Public Health the student must pass this examination with distinction.

<i>Fall Term</i>		
<i>Course</i>	<i>Title</i>	<i>Credit Units</i>
Biostatistics 1a, b	Principles of Biostatistics	4
Epidemiology 1b	Principles of Epidemiology	2
Epidemiology 5b	Special Problems in Infectious Diseases	.5

Fall Term (continued)

<i>Course</i>	<i>Title</i>	<i>Credit Units</i>
Industrial Hygiene 2a, b	Industrial Air Analysis	3
Maternal and Child Health 1a, b	Basic Problems and Special Services	3
Maternal and Child Health 2a, b	Basic Problems and Special Services	2
Maternal and Child Health 4a, b	Growth, Development and Nutrition	2
Maternal and Child Health 5b and Biostatistics 3b	Mortality and Morbidity	1
Nutrition 1a	Basic Nutrition	1.5
Nutrition 2b	Public Health Nutrition	1.5
Nutrition 4a, 4b	Journal Club	.5
Physiology 1a, b	Human Physiology and Its Application to Public Health	2
Public Health Practice 1a	Principles of Public Health Practice	2
Public Health Practice 2b	Public Health Practice	2
Public Health Practice 5a	Organization of Medical Care	2
Public Health Practice 8a	Control of Cancer	1
Public Health Practice 9b	Psychosocial Problems	1
Public Health Practice 10b	Public Health History	.5
Sanitary Engineering 1a, b	Principles of Sanitation	5
Sanitary Engineering 2a, b	Sanitary Bacteriology	6

Spring Term

<i>Course</i>	<i>Title</i>	<i>Credit Units</i>
Biostatistics 2c, d	Statistical Analysis	4
Biostatistics 4d and Maternal and Child Health 10d	Statistical Evaluation of the Growth of the Normal Child	1
Biostatistics 5d	Advanced Statistical Methods	1
Epidemiology 2c	The Practice of Epidemiology	3
Epidemiology 3d	Epidemiology of Tropical and Exotic Diseases	2
Epidemiology 4c	Clinical Aspects of Infectious Diseases	1.5
Epidemiology 5c, 5d	Special Problems in Infectious Diseases	.5

Spring Term (continued)

<i>Course</i>	<i>Title</i>	<i>Credit Units</i>
Epidemiology 6c	Diseases Caused by Animal Parasites	2
Epidemiology 7d	Military Preventive Medicine	1
Industrial Hygiene 1c, d	Basic Problems in Industrial Hygiene	4
Industrial Hygiene 2c, d	Industrial Air Analysis	3
Industrial Hygiene 3d	Industrial Medical Care	1
Maternal and Child Health 3d	Organization of Maternal and Child Health and Crippled Children's Services in the United States	1.5
Maternal and Child Health 6c	Social and Psychological Problems	1
Maternal and Child Health 7c	School Health Services	1
Maternal and Child Health 8c	Obstetrical Problems and Services	1
Maternal and Child Health 9d	Demonstrations of Maternal and Child Health Services	2
Nutrition 3c, 3d	Techniques of Public Health Nutrition	2
Nutrition 4c, 4d	Journal Club	.5
Physiology 2c, d	Environmental Physiology	2
Public Health Bacteriology 1c	Principles of Public Health Bacteriology and Immunology	2
Public Health Bacteriology 2d	Applied Immunology	1
Public Health Bacteriology 11d	Public Health Laboratory Procedures	1.5
Public Health Practice 3c	Problems in Public Health Practice	2
Public Health Practice 4d	Voluntary Health Agencies	1
Public Health Practice 6c, d	Administration of Medical Care Programs	4
Public Health Practice 7d	Hospital Organization and Community Relationships	2
Public Health Practice 11c	Control of Tuberculosis	2
Public Health Practice 12d	Venereal Disease Control	3
Public Health Practice 13c, d	Health Education Problems	2
Public Health Practice 16c, d	Public Health Nursing	1
Public Health Practice 17c and Biostatistics 3c	Mortality and Morbidity	1
Sanitary Engineering 3c, d	Sanitary Parasitology	4.5

DOCTOR OF PUBLIC HEALTH

For the degree of Doctor of Public Health the student must complete an approved program of independent investigation and must present the results of this research in an acceptable thesis. In order to obtain the degree the student must show real ability for independent and original investigation in some special field.

Requirements for Admission

1. An applicant for admission to candidacy for this degree must be either (a) a graduate of an approved medical school, or (b) an individual holding another doctoral degree who possesses exceptional basic training and experience in the field of public health.

2. One academic year in residence must have been devoted to the courses forming the curriculum for the degree of Master of Public Health. These courses must have been completed with honor. A student who has fulfilled the requirements for the Master of Public Health degree with honor elsewhere may be accepted provisionally as a candidate for the degree of Doctor of Public Health, final acceptance depending upon the progress of the work done by the student.

3. Before the applicant is admitted to candidacy for this degree, a special committee will be appointed to investigate his or her preparation in the chosen field and related fields of study, to pass upon the plan of the proposed thesis and to recommend whether the candidate is eligible to stand for the qualifying examination. This examination is oral, will cover the sciences basic to public health as well as the general course work represented by the M.P.H. degree, and is required of all candidates.

Requirements for the Degree

1. In exceptional cases the required work for the degree may be completed in one academic year of resident research, although, generally, the preparation of an acceptable thesis will require a longer period.

2. The Special Committee appointed to study the applicant's eligibility will continue to supervise his work. After completion of the thesis, the Special Committee will report to the Administrative Board upon its acceptability. Ordinarily the thesis must be submitted within five years of the candidate's acceptance.

3. If the thesis is accepted, the Chairman of the Committee on Examinations will conduct an oral examination by the Faculty of Public Health on the thesis and on those public health subjects to which the thesis is related.

4. Two bound copies of the thesis must be deposited in the Dean's Office at least four weeks before the date on which the degree is to be conferred. Each copy must be accompanied by a summary not exceeding 1200 words in length, which shall indicate clearly the purposes, methods and results of the investigation.

MASTER OF SCIENCE IN HYGIENE

(With Designation of the Field of Concentration)

This degree is granted on fulfillment of a program of advanced work in one of the basic disciplines of public health. The courses taken must form an integrated plan of study in one branch of knowledge and allied subjects.

Requirements for Admission

Candidates for admission to the School of Public Health for the degree of Master of Science in Hygiene must fulfill the general requirements for admission to the School and must have received an academic degree with distinction from an institution of recognized standing.

Requirements for the Degree

1. Completion of a minimum of two years of graduate work, one of which must have been spent in residence.

2. The student must pursue a program of formal and seminar courses recommended by the Head of the Department in which the

student wishes to concentrate. This program must include courses in public health (ordinarily Epidemiology, Biostatistics and Sanitary Engineering) and must be approved by the Administrative Board.

3. The student must complete his program of studies with honor grades. In addition he must pass with an honor grade a comprehensive examination in his principal and related fields of study.

DOCTOR OF SCIENCE IN HYGIENE

(With Designation of the Field of Concentration)

This degree is granted on successful completion of a program of independent research in one of the basic disciplines of public health, following broad and adequate preparation enabling the candidate to undertake the research problem.

Requirements for Admission

Candidates for the degree of Doctor of Science in Hygiene must fulfill the general requirements for admission to the School and must have completed the requirements for the degree of Master of Science in Hygiene.

Requirements for the Degree

1. Language requirements: The candidate must possess a reading knowledge of at least two languages, other than English, in which there exists a significant body of literature relevant to the candidate's field of study. This knowledge may be determined by examinations held ordinarily during the months of October and February of each year.

2. Qualifying examination: Before the applicant is admitted to candidacy for this degree, a special committee will be appointed to examine his or her preparation in the chosen field and related fields of study. Ordinarily, this examination will be given one academic year before the applicant expects to receive the degree. At the discretion of the committee, the comprehensive examination for the de-

gree of Master of Science in Hygiene, when passed with an honor grade, may be substituted for the qualifying examination.

3. Length of resident research: The degree of Doctor of Science in Hygiene is given on the basis of high attainment in a special branch of public health science. This must be evidenced by a minimum of one year of resident research, following admission to candidacy.

4. Thesis and final examination: A thesis showing original treatment of a fitting subject for research must be presented before admission to final examination for the degree. Two bound copies of the thesis must be deposited in the Dean's office four weeks before the date on which the degree is expected to be conferred. Each copy must be accompanied by a summary not exceeding 1200 words in length which shall indicate clearly the purposes, methods, and results of the investigation. The thesis must be approved by the committee before the candidate is permitted to take the final examination. This is usually oral and consists of detailed consideration of knowledge in the field of investigation and of work covered by the thesis.

SPECIAL STUDENTS

Applicants who do not meet the academic requirements for admission as candidates for degrees may be admitted to certain courses and programs of study at the discretion of the head of each department, and subject to conditions specified by him with the approval of the Committee on Admissions.

Students unable to spend a full academic year at the School may come for individual courses if their preparation for the course is approved by the head of the department and the Dean.

As the capacity of the School is limited, and priority is given to degree candidates, the number of special students who can be admitted is dependent on the number of applicants who are accepted for the regular course. Therefore, it is not possible to know until early in the fall how many special students can be received.

MASTER OF EDUCATION IN THE FIELD OF PUBLIC HEALTH EDUCATION

The program in this field is offered cooperatively by the School of Public Health and the Graduate School of Education and is ordinarily divided equally between these two fields.

This program is designed for experienced teachers who desire to prepare for work as supervisors or directors of public health education; also for individuals eligible for the degree of Master of Public Health who seek to prepare for work in the field of health education. Courses in the biological and physical sciences are prerequisite to the courses in public health. The standard program is divided between the two schools as follows:

School of Public Health

Sanitary Engineering 1a, b
 Nutrition 2b
 Biostatistics 1a, b
 Epidemiology 1b
 Public Health Practice 1a and 5a
 Maternal and Child Health 1a, b

School of Education

Educational Administration 15
 Educational Administration 16
 Educational Psychology 13
 Social Relations 186 (under the Faculty of Arts and Sciences)

Two introductory courses drawn from:

Educational Psychology 1
 Educational Measurement 1
 Philosophy of Education 1
 Comparative Education 2
 Principles of Teaching 5

For further information write The Secretary, Graduate School of Education, Lawrence Hall, Cambridge 38, Massachusetts.

MASTER OR DOCTOR OF SCIENCE IN ENGINEERING

Graduates of engineering colleges or scientific schools of recognized standing who are interested in the sanitary engineering or industrial hygiene aspects of public health may be admitted to the Graduate School of Engineering as candidates for the degree of Master or Doctor of Science. They may elect any of the courses offered in the School of Public Health.

For further information write The Secretary, Graduate School of Engineering, Pierce Hall, Cambridge 38, Massachusetts.

GENERAL INFORMATION

Registration

Registration in the School of Public Health for the academic year 1948-49 is from Monday, September 20 to Friday, September 24. Adequate time should be allowed by the student for the discussion of his program with the Dean or Assistant Dean of the School, who must approve each schedule.

All students who are not citizens of the United States will be referred before registration to the Counsellor for Foreign Students, 24 Quincy Street, Cambridge, where they will present a statement of admission, show their passports, and fill out a Student Registration form. They will then receive a card for presentation at registration, showing they have been cleared by the office of the Counsellor for Foreign Students.

Veterans

Information about the procedure to be followed in applying for educational benefits under the G.I. Bill may be secured from the Secretary of the School or from the Counsellor for Veterans, Government Aid Department, Weld Hall, Cambridge.

Veterans must file with the Dean a form giving complete information concerning their discharge from military service. Admission of veterans to the School is subject to approval by the Department of Hygiene of the University.

Housing

There are no dormitories for School of Public Health students but they may get their meals at Vanderbilt Hall dining room, the Medical School dormitory. Usually it is possible to rent furnished rooms in hotels or private homes in the vicinity of the School, or in the nearby residential section of Brookline. The School will supply such information as can be secured about available quarters but the responsibility for obtaining quarters rests with the student. The University maintains a Room Registry for graduate students at Phillips Brooks House in Harvard Square, Cambridge. Applications for quarters for married students and their families are handled by the office of Hunneman and Company, 18 Brattle Street, Cambridge. Students with families are advised to come at least three weeks in advance of registration and not to bring their families with them until living quarters are secured. Other students should plan to reach Boston at least a week in advance of registration.

Fees and Expenses

The fee for tuition for each academic year is \$570 for all full-time students. For part-time students the fee varies according to the courses taken and is based on the proportion of the annual fee for instruction which the credit units for each course bear to the total number of credits necessary for the degree of Master of Public Health, plus five dollars for each course. For example, a part-time student taking a course with a credit unit value of two would pay a tuition fee of \$33.50; a student taking a course with a credit unit value of four would pay \$62.

The fees required of candidates for the degrees of Master of Science in Hygiene, Doctor of Science in Hygiene and Doctor of Public Health will be prorated according to the course credits (including research courses) taken in any year on the same basis as mentioned above for part-time students working for the degree of Master of Public Health, but the total amount of fees paid toward any degree must equal the minimum residence tuition requirement for the

specific degree. The \$5 course fees required of part-time students are not included as pro-rated credit fees. Students who have completed the course work and the residence requirement for any degree, or have paid a total of two years' full tuition toward the Doctorate (at least one of which is subsequent to the completion of work equivalent to the requirements for the Master's Degree) and still have degree requirements to be fulfilled, shall pay, for a period which shall not ordinarily extend beyond two additional years, a tuition fee of half-rate per year for full-time work, and in proportion for less than full-time work. Residence is interpreted to mean that an individual is registered as a student and is using one or more of the facilities of the University. Residence may be completed on a part-time basis in proportion to the amount of fees paid relative to the total fee required to fulfill the minimum residence requirement, but in no case shall the tuition fee be less than \$50 per half-year for students, either part-time or full-time, who are in residence. A fee of \$25 per half-year shall be charged for any student completing degree requirements away from Harvard University.

Each full-time student will be charged a Medical and Infirmary fee of \$30 per year. Part-time students working at the *rate of* substantially half-time or less and living at home may be excused by the Bursar from the payment of such fee at any time within two weeks after their registration upon the recommendation of the Dean.

Bills for tuition and fees will be issued and payable as follows:

Issued Payable

Sept. 27	Sept. 29	{ $\frac{1}{4}$ of the tuition for the year $\frac{1}{2}$ Medical and Infirmary Fee for the year
Nov. 19	Dec. 10	{ $\frac{1}{4}$ of the tuition for the year Board through October 31 Miscellaneous charges
Jan. 20	Feb. 10	{ $\frac{1}{4}$ of the tuition for the year $\frac{1}{2}$ Medical and Infirmary Fee for the year Board through December 31 Miscellaneous charges

April 20	May 10	{ $\frac{1}{4}$ of the tuition for the year Board through March 31 Miscellaneous charges
June 15 *	June 22	{ Board to the end of the year Miscellaneous charges
June 30	July 15	{ Board to the end of the year Miscellaneous charges

Students who are candidates for degrees must have paid all dues to the University at least one day before the day upon which the degrees are to be voted. A student who leaves during the year is charged to the end of the tuition period in which he leaves provided before that time he gives the Dean notice in writing of his withdrawal; otherwise he is charged to the end of the tuition period in which such notice is given.

A student who leaves the University for any reason whatever must pay all charges against him immediately upon receipt of a bill from the Bursar. Every student will be held responsible for the payment of fees until he has notified the Dean of his intention to withdraw from the School.

All term bills will be sent to the student at his local address unless the Bursar is requested in writing to send them elsewhere.

Any student whose indebtedness to the University remains unpaid on the date fixed for payment is deprived of the privileges of the University until he is reinstated. Reinstatement is obtained only by consent of the Dean of the School in which the student is enrolled, after payment of all indebtedness and a fine of \$10 for late payment.

Bond Requirement

Upon entrance to the School every student is required to file with the Bursar a bond in the sum of \$500 as security for payment of University bills. The bond must be signed by two bondsmen, both of whom must be citizens of the United States, or by a surety company duly qualified to do business in Massachusetts. No officer or student

* Applies only to candidates for degrees.

of the University will be accepted as a bondsman and in no case will more than one parent be accepted. In lieu of the bond a student may deposit with the Bursar five hundred dollars in United States Treasury coupon-bearing bonds, or five hundred dollars in cash, which will bear no interest. Blank forms of bonds may be obtained at the Dean's Office or from the Bursar.

Student Health Service

In return for payment of the medical fee the School provides a physician to students who will give medical advice and treatment without charge during the school year. He is available to students for consultation at his office in Building A, Harvard Medical School, from 8.30 to 9.00 A.M., and from 4.30 to 6.00 P.M. daily except Saturdays and holidays. He may also be seen at other times by appointment and at any time in case of emergency. The fee also covers, when necessary, board and ordinary nursing care, for not more than a total of 2 weeks per term, in the Stillman Infirmary or in one of the teaching hospitals of the Medical School. There will be an extra charge for private rooms, special nursing care, X-rays and special treatment. In addition, each student is entitled to all the medical and other services that have been organized under the Student Health Service plan of the University.

Any illness necessitating absence from work should be reported to the Student Health Office by the student, or by an attending physician.

Under the auspices of the Department of Medicine of the Harvard Medical School students paying the medical fee will be required to undergo a complete medical examination shortly after admission to the School.

Evidence of having been satisfactorily vaccinated is required for entrance to Harvard University and a form of certification for this purpose is sent to each student who is accepted for admission.

Fellowships and Scholarships

Certain fellowships and scholarships derived from special gifts to the University are open to students in the several departments of the

University. They are administered by the Committee on General Scholarships, of which the Dean of the Faculty of Arts and Sciences is the Chairman. Application for any of these fellowships or scholarships must be made on a special form which may be obtained from the Chairman of the Committee on General Scholarships, 5 University Hall, Cambridge 38, Mass. Some of these fellowships and scholarships are granted to persons not previously members of the University, though preference is given, as a rule, to students who have already given evidence of their qualifications by work done in some department of the University. Appointments to fellowships and scholarships for any academic term are made, in most cases, by the Corporation, on recommendation of the Committee on Fellowships, at the beginning of the preceding academic term.

CONTENT OF THE COURSES OFFERED BY THE FACULTY OF PUBLIC HEALTH

PUBLIC HEALTH FORUMS

JAMES S. SIMMONS, S.B., M.D., Ph.D., Dr.P.H., S.D. (hon.), *Dean and Professor of Public Health*, Members of the Faculty and Guest Lecturers.

Public Health Forums. The Evolution, Scope and Objectives of Public Health

Lectures and seminars. *Time to be arranged.* Dean SIMMONS and associates.

A series of Forums will be held during the year in order to afford an opportunity for the entire student body to meet with the Faculty and distinguished guest lecturers to consider in a broad way the evolution, scope and objectives of the profession of public health.

The modern practice of public health requires coordinated team work and the integrated action of experts trained in a number of different, though related, scientific fields. Proper emphasis is given to training in these special disciplines in the courses offered by the various departments. However, it is impossible for every student to take all the courses, and certain individuals may have no contact with one or more departments. These general public health forums will have the advantage of cutting across departmental lines. They will give every student some contact with all sections of the School, and make it possible for him to learn something of the objectives and interests of each department and its relationship to public health as a whole.

The main purpose of these lectures and seminars is to help orient the student, to assist him in visualizing the wide field covered by his chosen profession, and to stimulate constructive thinking and planning for his future activities.

Some of the sessions will be devoted to a broad survey of the historical development, the present status, and the future objectives of public health; others will present special applications of basic public health disciplines.

DEPARTMENT OF BIOSTATISTICS

HUGO MUENCH, A.B., M.D., Dr.P.H., A.M. (hon.), *Professor of Biostatistics and Head of the Department.*

CARL R. DOERING, A.B., M.D., S.D., *Assistant Professor of Biostatistics.*

JANE WORCESTER, A.B., Dr.P.H., *Assistant Professor of Biostatistics.*

ROBERT B. REED, A.B., A.M., Ph.D., *Associate in Biostatistics.*

HERBERT R. DOMKE, S.B., M.D., M.P.H., *Research Fellow in Biostatistics.*

Biostatistics 1a, b. Principles of Biostatistics

Lectures, discussions and laboratory. *Mondays and Wednesdays, 2-5, first and second periods.* Dr. MUENCH and associates.

Credit 4 units.

This course is designed to cover the basic principles of statistical method as applied to biological sciences in general and to public health problems. Subjects presented will include collection, tabulation and elementary analysis of data; measures of center and of dispersion; and sampling from populations. The aim of the course is to prepare the student to draw justified conclusions from numerical data.

Biostatistics 2c, d. Statistical Analysis

Lectures, discussions and laboratory. *Tuesdays and Thursdays, 10-1, third period; Tuesdays and Fridays, 10-1, fourth period.* Dr. MUENCH and associates.

Credit 4 units.

This course is designed to give training to the epidemiologist and the research worker in the proper use of statistical methods in the analysis and interpretation of questions which can be stated statistically. In general, the course will deal with the interrelation of variables, the interpretation of trends of different sorts and the elementary mathematical analysis of biological phenomena.

Prerequisites: Biostatistics 1a, b, Epidemiology 1b or their equivalents.

Biostatistics 3b and 3c. Forces of Mortality and Morbidity in a Population

3b. Seminars. *Mondays, 10-12, second period.* Dr. REED, Dr. STUART, Miss LOMBARD.

Credit 1 unit.

This part of the course is given jointly with the Department of Maternal and Child Health (see Maternal and Child Health 5b). It will deal with the investigation of specific causes of death and morbidity in maternity, infancy and childhood.

3c. Seminars. *Tuesdays, 2-4, third period.* Dr. DOERING, Dr. GOLDMANN.

Credit 1 unit.

This part of the course is given jointly with the Department of Public Health Practice (see Public Health Practice 17c). It will consider the incidence of morbidity and mortality in the general population and will investigate methods of estimating the need for medical care.

Prerequisites: For 3b, Biostatistics 1a, b and Maternal and Child Health 1a, b, or their equivalents; for 3c, Biostatistics 1a, b and Public Health Practice 1a and 5a or their equivalents.

Biostatistics 4d. Statistical Evaluation of the Growth of the Normal Child

Seminars. *Mondays, 2-4, fourth period.* Dr. REED, Dr. STEVENSON, Miss LOMBARD.

Credit 1 unit.

This course is given jointly with the Department of Maternal and Child Health (see Maternal and Child Health 10d). The material to be treated has been accumulated over a long period of years in the study of growth and development carried on by the Department of Maternal and Child Health.

Prerequisites: Biostatistics 1a, b, Maternal and Child Health 1a, b and 4a, b or their equivalents.

Biostatistics 5d. Advanced Statistical Methods

Seminars. *Fridays, 2-4, fourth period.* Dr. WORCESTER, Dr. MUENCH.

Credit 1 unit.

The content of this course will vary from year to year. During 1948-49, the subject will be the application of statistical method to consideration of the genesis of epidemics and the nature of infection.

Prerequisites: Biostatistics 1a, b and 2c, d; Epidemiology 1b and 2c; or their equivalents.

Biostatistics 6c, d. Seminar in Biostatistics

Seminars. *One period of two hours weekly throughout the third and fourth periods, time to be arranged.* Staff of the Department.

Credit 2 units.

This seminar is arranged primarily for the Department's staff. However, occasional students with special interest and sufficient preparation will be admitted.

Biostatistics 20. Biostatistical Research

Time and credit to be arranged according to amount of work done.

Reading and research in selected topics of biostatistics by students specializ-

ing in this field or those who desire supervision in working out statistical problems in their special fields of interest.

DEPARTMENT OF EPIDEMIOLOGY

JOHN E. GORDON, S.B., Ph.D., M.D., A.M. (hon.), F.R.C.P. (Lond.), *Professor of Preventive Medicine and Epidemiology and Head of the Department.*

CONRAD WESSELHOEFT, M.D., *Clinical Professor of Infectious Diseases.*

THEODORE H. INGALLS, A.B., M.D., *Assistant Professor of Epidemiology.*

A. DANIEL RUBENSTEIN, A.B., M.D., M.P.H., *Assistant Professor of Epidemiology.*

LAWRENCE KILHAM, A.B., A.M., M.D., *Instructor in Epidemiology.*

JOHN J. POUTAS, A.B., M.D., M.P.H., *Instructor in Epidemiology.*

HUGH L. C. WILKERSON, B.S., M.D., M.P.H., *Research Fellow in Epidemiology.*

W. LLOYD AYCOCK, M.D., *Associate Professor of Preventive Medicine and Hygiene.*

LOUIS WEINSTEIN, S.M., Ph.D., M.D., *Instructor in Infectious Diseases.*

Division of Parasitology and Tropical Medicine

DONALD L. AUGUSTINE, S.D., D.Sc. (hon.), A.M. (hon.), *Associate Professor of Comparative Pathology and Tropical Medicine.*

QUENTIN M. GEIMAN, S.M., Ph.D., *Assistant Professor of Tropical Diseases.*

ALBERT A. HORNOR, A.B., M.D., *Instructor in Tropical Diseases.*

THOMAS H. WELLER, A.B., S.M., M.D., *Instructor in Comparative Pathology and Tropical Medicine.*

Epidemiology 1b. Principles of Epidemiology

Lectures and seminars. *Mondays, 12-1, Fridays, 11-1, second period, Wednesdays, 12-1, last half of second period.* Dr. GORDON and associates.

Credit 2 units.

An introduction to epidemiology, presenting the principles, historical development and methods of epidemiologic investigation. Current and classical illustrations of epidemic and endemic prevalence are used to demonstrate the factors governing infection, disease resistance and immunity in population groups. Selected problems dealing with the investigation and control of communicable and non-communicable disease illustrate the application of the epidemiologic method to public health practice.

Prerequisite: Biostatistics 1a, b.

Epidemiology 2c. The Practice of Epidemiology

Conferences seminars and laboratory exercises. *Mondays, Wednesdays, and Fridays, 10-1, third period.* Dr. GORDON, Dr. RUBENSTEIN, and associates.

Credit 3 units.

A conference and laboratory course dealing principally with the epidemiology of the acute communicable diseases of temperate climates. The laboratory work demonstrates field methods used in the collection, analysis and interpretation of data derived from epidemic and endemic situations. Modes of infection are defined and the laws of epidemics examined. The correlation of clinical, field and laboratory procedures is emphasized in the development and evaluation of programs for the prevention of disease and the management of epidemics.

Prerequisite: Epidemiology 1b.

Epidemiology 3d. Epidemiology of Tropical and Exotic Diseases

Lectures, laboratory exercises, and demonstrations. *Tuesdays and Thursdays, 2-5, fourth period.* Dr. GORDON, Dr. AUGUSTINE, Dr. GEIMAN and associates.

Credit 2 units.

A joint course presented by the Departments of Epidemiology and Parasitology designed to cover the broader aspects of tropical and exotic diseases. The agency of insects and other arthropods in the transmission of disease receives special consideration. Diseases of bacterial or viral nature are presented as epidemiologic problems with special attention to prevention and control.

Courses 3d and 6c constitute a sequence and ordinarily will be elected together. Under exceptional circumstances, and with the approval of the instructor, either may be taken independently.

Prerequisite: Epidemiology 1b.

Epidemiology 4c. Clinical Aspects of Infectious Diseases

Lectures, demonstrations, clinics and conferences. *Wednesdays and Fridays, 9-10, Clinics, Fridays, 3:30-5, third period.* Dr. WESSELHOEFT and associates.

Credit 1.5 units.

The care and management of patients with acute infectious diseases is presented with special reference to the problems of the epidemiologist and health officer. Diagnostic methods, isolation of patients in home and hospitals, and modern methods of treatment are presented and discussed.

Epidemiology 5b, 5c, 5d. Special Problems in Infectious Diseases

Seminars and clinics. *Saturdays, 9-11, second, third or fourth periods.* Dr. WESSELHOEFT and associates.

Credit .5 unit in each period.

An advanced course in clinical infectious diseases dealing with selected topics based on available clinical material at the Haynes Memorial Hospital.

Epidemiology 6c. Diseases Caused by Animal Parasites

Lectures, seminars, laboratory exercises and demonstrations. *Tuesdays and Thursdays, 2-5, third period.* Dr. AUGUSTINE, Dr. GORDON and associates.

Credit 2 units.

This course covers the important parasitic diseases of man from the public health viewpoint. The geographical distribution of these parasites, their mode of transmission and methods of prevention and control are studied. Clinical aspects and chemotherapy of parasitic diseases are discussed. Special emphasis is given to methods of laboratory diagnosis and to the study of host-parasite reactions in experimental animals.

Courses 6c and 3d constitute a sequence and ordinarily will be elected together. Under exceptional circumstances, and with the approval of the instructor, either may be taken independently.

Epidemiology 7d. Military Preventive Medicine

Seminars. *Wednesdays, 11-1, fourth period.* Dr. GORDON.

Credit 1 unit.

A series of seminars, conferences and demonstrations concerned with administrative and professional problems in military preventive medicine. Designed primarily for students from the military services. Admission by permission of the instructor.

Epidemiology 15a, b, c, d. Advanced Epidemiology

Seminars and field work. *Hours to be arranged during first, second, third and fourth periods.* Dr. GORDON and Dr. INGALLS.

Credit 1 to 3 units in each period.

An informal course designed to further a command of the epidemiologic method through individual training and practical experience. Each student is assigned a problem or develops a previous interest through field study, laboratory experiment or library investigation. Seminars are devoted to discussion of these problems. Admission is by permission of the instructor and credit is in proportion to the amount of time devoted to the work. No more than 10 students will be accepted.

Epidemiology 20. Research in Epidemiology

Qualified students are offered the opportunity to undertake special studies in Parasitology and Tropical Medicine. Fields of interest include the acute communicable diseases and community problems of non-communicable processes. Fundamental research on problems relating to tropical diseases may be

arranged and opportunities are at times afforded for investigators engaged on special problems to work in laboratories of hospitals situated within the tropics, or to cooperate in field investigations. Properly qualified workers may be assigned problems or may be aided in the development of their own interests.

DEPARTMENT OF INDUSTRIAL HYGIENE

PHILIP DRINKER, S.B., Chem.E., S.D. (hon.), LL.D., A.M. (hon.), *Professor of Industrial Hygiene and Head of the Department.*

CONSTANTIN P. YAGLOU, B.A., S.B., M.M.E., *Professor of Industrial Hygiene.*

LESLIE SILVERMAN, S.B., S.M., S.D., *Associate Professor of Industrial Hygiene.*

ALBERT O. SEELER, A.B., M.D., *Assistant Professor of Industrial Medicine.*

ROSS A. MCFARLAND, A.B., Ph.D., S.D. (hon.), *Assistant Professor of Industrial Hygiene.*

WILLIAM H. FORBES, A.B., A.M., Dr.Phil., *Lecturer in Industrial Hygiene.*

CHARLES R. WILLIAMS, Ph.D., *Instructor in Industrial Hygiene.*

THOMAS L. SHIPMAN, Ph.B., M.D., *Instructor in Industrial Hygiene.*

EMMA S. TOUSANT, LL.B., *Instructor in Industrial Hygiene.*

HARRIET L. HARDY, M.D., *Instructor in Industrial Hygiene.*

HENRY C. MARBLE, A.B., M.D., *Assistant in Industrial Hygiene.*

ROBERT M. THOMSON, *Assistant in Industrial Hygiene.*

C. GUY LANE, A.B., M.D., *Clinical Professor of Dermatology, Emeritus.*

Industrial Hygiene 1c, d. Basic Problems in Industrial Hygiene

Lectures and demonstrations. *Mondays and Fridays, 2-4, third period and first month of fourth period. Field trips, Wednesdays, 1:30-5.* Professor DRINKER, Dr. SEELER and associates.

Credit 4 units.

A course of lectures, demonstrations, clinics, and inspections showing the relation of working conditions to health, with special reference to the elimination of industrial hazards, the prevention and treatment of industrial disabilities and diseases, and the conservation of health of industrial workers.

Industrial Hygiene 2a, b and 2c, d. Industrial Air Analysis

Laboratory work. *Tuesdays and Thursdays, 2-5, fall and spring terms.* Dr. SILVERMAN and Dr. WILLIAMS.

Credit 3 units in each term.

Determination and interpretation of adverse conditions found in work

places of all types, such as factories and mills, and in assembly halls; methods employed in determining physical properties of the air, such as temperature, humidity, and air motion; atmospheric impurities and normal constituents of the air — gases, dusts, bacteria and pollens; efficiencies of protective devices — masks, respirators, mechanical dust-collecting apparatus, hoods and exhausters; efficiencies of air-conditioning equipment.

Industrial Hygiene 3d. Industrial Medical Care

Conferences and clinics. *Mondays, Wednesdays, and Fridays, 2-4, second month of fourth period.* Dr. SEELE and Dr. HARDY.

Credit 1 unit.

Special instruction in pathology and laboratory diagnosis of industrial diseases, clinical conferences and clinic visits. Limited to physicians specializing in Industrial Hygiene.

Engineering 441a. Heating and Ventilation

Lectures. *Mondays, Wednesday, and Fridays, 8-9, fall term, at Pierce Hall, Cambridge.* Professor YAGLOU.

The theory and practice of heating and ventilating. For engineers.

Engineering 441b. Air Conditioning

Lectures. *Mondays, Wednesdays and Fridays, 8-9, spring term, at Pierce Hall, Cambridge.* Professor YAGLOU.

The theory and practice of air conditioning. For engineers.

Industrial Hygiene 4d. Industrial Ventilation

Lectures and problems. *Mondays, Wednesdays and Fridays, 2-4, second month of fourth period.* Dr. SILVERMAN.

Credit 1 unit.

Design, operation and appraisal of industrial ventilation systems. For engineers.

Industrial Hygiene 20. Research

A limited number of qualified students will be given an opportunity to do research work in industrial hygiene, including industrial hazards, toxicology, heating and ventilating, and air conditioning, by arrangement with the Head of the Department.

DEPARTMENT OF MATERNAL AND CHILD HEALTH

HAROLD C. STUART, Litt.B., M.D., A.M. (hon.), *Professor of Maternal and Child Health and Head of the Department.*

BERTHA S. BURKE, A.B., A.M., *Assistant Professor of Maternal and Child Nutrition.*

SAMUEL B. KIRKWOOD, A.B., M.D., *Assistant Professor of Maternal Health.*

STUART S. STEVENSON, A.B., M.D., M.P.H., *Assistant Professor of Child Health.*

ELIZABETH P. RICE, A.B., S.M., *Assistant Professor of Medical Social Work.*

LEONA BAUMGARTNER, A.B., Ph.D., M.D., *Visiting Lecturer on Maternal and Child Health.*

STANTON GARFIELD, A.B., M.D., M.P.H., *Instructor in Child Health.*

KATHLEEN SCOBIE, S.B., S.M., *Research Fellow in Maternal and Child Health.*

OLIVE M. LOMBARD, B.Sc., *Research Fellow in Maternal and Child Health.*

ROBERT O. ROTH, M.D., *Research Fellow in Maternal and Child Health.*

JEAN F. WEBB, B.Sc., M.D.C.M., D.P.H., *Research Fellow in Maternal and Child Health.*

RUTH MARIE GAESSLER, S.B., *Assistant in Maternal and Child Health.*

MARGARET J. BORGES, A.B., M.D., *Assistant in Child Health.*

FRANCES S. GENDRAL, A.B., S.S.M., *Assistant in Maternal and Child Health.*

ELLIOT D. GIDDON, S.B., M.D., *Assistant in Maternal and Child Health.*

CHARLES A. JANEWAY, A.B., M.D., *Thomas Morgan Rotch Professor of Pediatrics.*

WILLIAM T. GREEN, A.M., M.D., *Clinical Professor of Orthopedic Surgery.*

CLEMENT A. SMITH, M.D., *Assistant Professor of Pediatrics.*

STEWART H. CLIFFORD, M.D., *Associate in Pediatrics.*

The public health problems and activities which concern a division of maternal and child health have to do with many fields of science. Some of these relate to the health and welfare of all age groups, but are of particular importance to the infant or the child. Others are problems of early life only, or require special services for these age groups. Still others relate only to the health of women during the child bearing period. Since this range of subjects is very broad, the Department gives little attention to those problems pertaining to health which are more fully considered by other departments of the school. On the other hand, the special problems peculiar to maternity and childhood are considered even though they may relate to the general fields of other departments. Thus the special aspects of diet during pregnancy and lactation, infant feeding, and diet at succeeding periods of childhood are emphasized. Communicable diseases commonly occurring in childhood are not studied in all aspects, but immunization procedures and environmental control measures particularly applicable in early life are discussed. Administrative

procedures for the conduct of special maternal and child health services are given special consideration, in close collaboration with the Department of Public Health Practice.

It is highly desirable that students interested in maternal and child health enroll for courses in nutrition and infectious diseases, as well as for the basic public health subjects, and that they then take as many of the courses offered by this Department as time permits. It is also desirable that these students elect the field visits provided by the Department during the year and arrange for field training in a maternal and child health unit of government after completion of the academic year, if this experience has not been obtained previously.

The Department offers general courses intended for all students desiring broad understanding of the problems and services in this field of public health. In addition it offers seminar courses on special subjects, demonstrations and field visits, and assignments for individual projects under supervision. These courses are so distributed throughout the year that all may be taken by students majoring in this field while also taking general courses in the basic public health subjects offered by other departments. In the seminar courses, student participation in the discussions is encouraged and experience is afforded in presenting assigned subjects.

Clinics will be arranged from time to time throughout the year at associated hospitals or other institutions, at which cases will be presented which demonstrate obstetric and pediatric problems of importance from a public health standpoint. These may replace scheduled exercises in the respective courses or be held at convenient hours outside the schedule. Individual students electing to do special work under Maternal and Child Health 20 may also secure certain clinical opportunities essential for their projects. It should be understood, however, that clinical training in obstetrics and pediatrics cannot be provided as part of the curriculum offered by this Department or arranged during the academic year.

GENERAL COURSES

Maternal and Child Health 1a, b. Basic Problems and Special Services

Lectures. *Tuesdays, Thursdays and Saturdays, 12-1, first period; Tuesdays and Thursdays, 12-1, and Saturdays, 10-11, second period.* Dr. STUART, Dr. KIRKWOOD, Prof. BURKE, Dr. STEVENSON and Dr. ———.

Credit 3 units.

This is a single course covering maternal, infant and child health problems and services in broad outline. It deals with the major causes of death and disability at each age period and the preventive measures applicable to them,

as well as the special services designed to meet the various health problems of mother, fetus, infant and child.

Maternal and Child Health 2a, b. Basic Problems and Special Services

Seminars. *Fridays, 2-4, first and second periods.* Dr. STUART, Dr. KIRKWOOD, Prof. BURKE, Dr. STEVENSON and Dr. ———.

Credit 2 units.

These seminars run concurrently with the lectures of 1a, b and provide an opportunity for discussion and elaboration on the subjects presented in the lectures. They are listed as a separate course so that students specializing in other departments may take the lectures for general orientation in maternal and child health without electing the seminars.

Maternal and Child Health 3d. Organization of Maternal and Child Health and Crippled Children's Services in the United States

Lectures and Seminars. *Tuesdays, 9-10, and 2-4, fourth period.* Dr. ——— and associates.

Credit 1.5 units.

This course is designed particularly for students who propose to work in the field of maternal and child health and wish to familiarize themselves with the organization and administration of programs at various levels of government in the United States and for different types of populations. The course is given in the fourth period for students who have taken special work in the Department and are familiar with the problems in this field. The Faculty will be assisted by leading administrators from different localities who will describe their programs in lectures and participate in the seminar discussions.

SEMINARS ON SPECIAL SUBJECTS

Maternal and Child Health 4a, b. Growth, Development and Nutrition

Seminars. *Mondays, 11-1, first period and Saturdays, 11-1, second period.* Dr. STUART, Prof. BURKE, Dr. STEVENSON and associates.

Credit 2 units.

This course provides basic information regarding the normal child and his requirements for normal growth and health. Familiarity with these subjects is essential for work in the field of maternal and child health and is important for those who propose to take the other special courses given by the department. This course should be of particular value to those interested in nutrition as well as to all students majoring in maternal and child health.

Maternal and Child Health 5b. Mortality and Morbidity

Seminars. *Mondays, 10-12, second period.* Dr. STUART, Dr. REED and Miss LOMBARD.

Credit 1 unit.

This course is given jointly with the Department of Biostatistics (see Biostatistics 3b).

It deals with the relative importance of different causes of death and illness by age and locality and with the progress thus far made in reducing individual rates. The purpose is to provide a better understanding of the extent and nature of the leading problems of maternal and child health.

Maternal and Child Health 6c. Social and Psychological Problems

Seminars. *Thursdays, 10-12, third period.* Dr. STUART, Miss RICE and associates.

Credit 1 unit.

Social, psychological and other factors in family and community life which have an important bearing on the child will be presented. The Faculty will be assisted by visitors from the fields of child psychology and psychiatry.

Maternal and Child Health 7c. School Health Services

Seminars. *Tuesdays, 10-12, third period.* Dr. STEVENSON, Dr. ————— and associates.

Credit 1 unit.

This course will consider the School Health Program from the standpoints of health education, environmental supervision, the control of communicable disease, and the individual preventive medical care of the child. Current methods will be criticized in the light of recent re-evaluations of the aims and limitations of the program.

Maternal and Child Health 8c. Obstetrical Problems and Services

Seminars. *Saturdays, 10-12, third period.* Dr. KIRKWOOD and associates.

Credit 1 unit.

This course will enlarge upon the basic clinical problems touched upon in course 1a, b and 2a, b and will deal with recent advances in clinical obstetrics and gynecology as well as the administration of hospitals, clinics and home services for the care of the pregnant woman and the newborn infant.

Maternal and Child Health 9d. Demonstrations of Maternal and Child Health Services

Field Visits. *Thursdays, 9-12, and 2-5, fourth period.* Dr. KIRKWOOD, Dr. STUART, Dr. ————— and associates.

Credit 2 units.

The group electing these visits will be divided into sections each in rotation

visiting prenatal clinics, obstetrical and newborn hospital services, infant and preschool child health conferences, school health services and other special agencies. The Boston Lying-in Hospital, Free Hospital for Women, Florence Crittenton Maternity Home, the Child Health Division of the Children's Medical Center and the Health Conferences of the Town of Brookline and the City of Boston are customarily used for these purposes.

Maternal and Child Health 10d. Statistical Evaluation of the Growth of the Normal Child

Seminars. *Mondays, 2-4, fourth period.* Dr. STEVENSON, Dr. REED, and Miss LOMBARD.

Credit 1 unit.

This course is given jointly with the Department of Biostatistics (see Biostatistics 4d). The material to be treated has been accumulated over a long period of years in the study of growth and development carried on by this Department.

Maternal and Child Health 13b, 14c and 15d

Field trips for training in maternal and child health services. Three to five days each during periods in January, April and June. Dr. ————, Miss Frazier and associates.

Credit .5 unit for each three-day trip; 1 unit for each five-day trip.

Trips will be arranged during the periods in which no classes are held at the school. Students electing these field exercises will have opportunities to see programs in operation under Departments of Maternal and Child Health and to participate in discussions with members of these departments regarding practical problems of service and administration.

Maternal and Child Health 20. Special Assignments for Individual Work

Students majoring in Maternal and Child Health will have an opportunity to do individual work for credit under instructor guidance on problems relating to this special field. Each program will be arranged in conference between student and instructor and must be accepted in advance by the head of the Department. In general such programs will include review of the literature on the subject selected, clinical observations including some original work and a paper reporting the work done. This work may be done during the second, third or fourth periods, depending upon the subject chosen and its relation to the courses of instruction taken. Permission to take Course 20 will be granted only to those who pass with honor grades the scheduled courses in this field during the preceding period or periods.

DEPARTMENT OF NUTRITION

FREDRICK J. STARE, S.B., S.M., Ph.D., M.D., A.M. (hon.), *Professor of Nutrition and Head of the Department.*

DAVID M. HEGSTED, S.B., S.M., Ph.D., *Associate Professor of Nutrition.*

ELIZABETH K. CASO, S.B., S.M., *Instructor in Nutrition.*

HELEN BAUGHMAN, S.B., S.M., *Instructor in Nutrition.*

ELIZABETH A. LOCKWOOD, A.B., A.M., Dr.P.H., *Research Associate in Nutrition.*

MARTHA F. TRULSON, S.B., M.P.H., *Research Associate in Nutrition.*

JAMES W. GODDARD, M.D., *Research Associate in Pathology.*

GEORGE V. MANN, A.B., Sc.D., M.D., *Research Fellow in Nutrition.*

ROBERT P. GEYER, A.B., Ph.D., *Research Fellow in Nutrition.*

SHERWOOD W. GORENS, Ph.B., M.D., *Research Fellow in Nutrition.*

GWELDA S. MCPHEE, A.B., A.M., *Assistant in Nutrition.*

A. BAIRD HASTINGS, S.B., Ph.D., S.D., *Hamilton Kuhn Professor of Biological Chemistry.*

JAMES H. SHAW, S.B., S.M., Ph.D., *Assistant Professor of Dental Medicine.*

Nutrition 1a. Basic Nutrition

Lectures. *Tuesdays, Thursdays and Saturdays, 9-10, first period.* Dr. STARE and associates.

Credit 1.5 units.

This course deals with the fundamentals of the chemistry and physiology of nutrition. Among the subjects discussed are history and development of the science of nutrition, energy metabolism and requirements; protein, mineral, and vitamin metabolism; acid-base balance of the body; physiology of digestion; intermediary metabolism; and vitamin-enzyme-hormone relationships.

Nutrition 2b. Public Health Nutrition

Lectures. *Tuesdays, Thursdays and Saturdays, 9-10, second period.* Dr. STARE and associates.

Credit 1.5 units.

This course deals with the practical application of the science of nutrition to the problems of human nutrition, especially in the field of public health. Dietary requirements are considered in their relation to growth, development, disease, pregnancy, lactation, and the formation and maintenance of dental structures. Methods for establishing the minimum and optimum nutritional

requirements, together with the problems of meeting these requirements, especially for low income groups are discussed. Methods of taking nutritional histories and the use of physical and chemical methods for evaluating the nutritional state of individuals or large groups are presented with special emphasis on nutritional surveys of population groups. The place of the nutritionist in the public health program is considered and various fields of a well-rounded nutrition service are discussed as it correlates with the activities of health, welfare, educational and industrial organizations. The principles of diet therapy are taught. The effect of various environmental, social, economic, and psychological factors upon food habits is also studied as they influence the nutritional status of an individual or group of people. The consequences of nutritional deficiencies and the relation of optimum nutrition to national and international health and economy are discussed. The nutritional problems of relief, rehabilitation, famine, and other emergencies are dealt with. The relation of production, distribution and preparation for the best use of foods is discussed, as are also the problems of food enrichment and fortification.

Nutrition 3c, 3d. Techniques of Public Health Nutrition

Seminars. *Mondays and Fridays, 2-4, third and fourth periods.* Dr. STARE and Mrs. CASO.

Credit 2 units in each period.

The purpose of this seminar course is to give the student a more complete picture of the various phases of public health nutrition work and an opportunity to develop some of the techniques for nutrition education. The following subjects are considered: techniques and procedures for organizing and conducting a nutrition service; nutrition work with health, welfare, educational, industrial and institutional organizations; the study of factors affecting food habits; techniques of individual and group instruction; preparation and criticism of nutrition educational materials—exhibits, pamphlets, newspaper articles, radio talks, etc.; review and criticism of current books on nutrition and related subjects.

Additional time and credit for field work may be arranged for individual students. The Department of Nutrition participates in community nutrition programs in various Boston suburbs and has excellent field facilities in community nutrition.

Prerequisite: Nutrition 1a and 2b or equivalent.

Nutrition 4a, 4b, 4c, 4d. Journal Club

Seminars. *Fridays, 4-5, during all four periods.* Dr. STARE and associates.

Credit .5 unit in each period.

Brief discussions of current literature in fundamental and applied nutrition and assigned topics.

Prerequisite: Nutrition 1a or its equivalent. Admission limited and subject to the approval of the instructor.

Nutrition 20. Advanced Nutrition

Time (at least 2 half days per week) and credit to be arranged. *Fall and spring terms.* Dr. STARE and associates.

Facilities are available for advanced work in nutrition along the following lines: fundamental research in nutrition, laboratory methods in nutrition, applied nutrition in public health and medicine, applied nutrition in food management and service.

Prerequisite: Nutrition 1a and 2b or the equivalent. Admission limited and subject to the approval of the instructor.

DEPARTMENT OF PHYSIOLOGY

JAMES L. WHITTENBERGER, S.B., M.D., *Assistant Professor of Physiology and Head of the Department.*

ESTHER HARDENBERGH, A.B., A.M., *Instructor in Physiology.*

STANLEY J. SARNOFF, A.B., M.D., *Research Fellow in Physiology.*

JAMES V. MALONEY, JR., M.D., *Research Fellow in Physiology.*

BENJAMIN G. FERRIS, JR., A.B., M.D., *Research Fellow in Physiology.*

Physiology 1a, b. Human Physiology and Its Application to Public Health

Lectures and demonstrations. *Tuesdays and Thursdays, 12-1, first and second periods.* Dr. WHITTENBERGER.

Credit 2 units.

A course in elementary human physiology, with particular emphasis on the systems and reactions of the body which are of major importance in public health problems. The course is designed primarily for students of sanitary engineering; it is recommended also to those who need a physiological background for work in other fields. The course is prerequisite to Physiology 2d for those who lack adequate training in physiology.

Physiology 2c, d. Environmental Physiology

Lectures and conferences. *Tuesdays and Thursdays, 12-1, third and fourth periods.* Dr. WHITTENBERGER, Dr. FORBES, and Dr. McFARLAND.

Credit 2 units.

It is the purpose of public health to promote living and working conditions conducive to the health and productivity of man all over the world and under many different circumstances. The human organism reacts characteristically to changes in the physical environment, to changes in the amount and nature

of its work, and to variations in the food supply. In every instance large groups of people are involved, and a reasonable knowledge of the principles of public health thus requires realization of the effects of the commoner environmental factors such as heat, barometric pressure, radiation, atmospheric contamination, changes in diet, and variations in work. Personnel placement, productivity, impairment and fatigue are considered in relation to limiting environmental conditions, physical and mental fitness, aging, and other personal factors.

Prerequisite: Physiology 1a, b or its equivalent.

Physiology 20. Research in Physiology

Properly qualified students will be given opportunities to work in the laboratory provided they can spend at least four months of undivided time.

DEPARTMENT OF PUBLIC HEALTH BACTERIOLOGY

JOHN C. SNYDER, A.B., M.D., *Professor of Public Health Bacteriology and Head of the Department.*

GEOFFREY EDSALL, M.D., *Assistant Professor of Public Health Bacteriology and Director of the Division of Biologic Laboratories, Department of Public Health of Massachusetts.*

EDWARD S. MURRAY, A.B., M.D., *Assistant Professor of Public Health Bacteriology.*

ROLLA E. DYER, A.B., M.D., LL.D., *Visiting Lecturer in Public Health Bacteriology.*

MARIANNA R. BOVARNICK, A.B., Ph.D., *Research Associate in Public Health Bacteriology.*

HENRY S. FULLER, S.B., M.D., *Research Associate in Medical Entomology.*

JAMES A. MCCOMB, D.V.M., *Instructor in Public Health Bacteriology and Assistant Director of the Division of Biologic Laboratories, Department of Public Health of Massachusetts.*

JOHN M. NEWELL, A.B., ScD., *Instructor in Public Health Bacteriology and Senior Chemist, Division of Biologic Laboratories, Department of Public Health of Massachusetts.*

J. HOWARD MUELLER, S.M., Ph.D., A.M. (hon.), *Charles Wilder Professor of Bacteriology and Immunology.*

JOHN F. ENDERS, Ph.D., *Associate Professor of Bacteriology and Immunology.*

MONROE D. EATON, A.M., M.D., *Associate Professor of Bacteriology and Immunology.*

F. SARGENT CHEEVER, A.B., M.D., *Silas Arnold Houghton Assistant Professor of Bacteriology and Immunology.*

WILLIAM A. HINTON, S.B., M.D., *Lecturer on Bacteriology and Immunology and Chief of Wassermann Laboratory, Department of Public Health of Massachusetts.*

ROBERT A. MACCREADY, S.B., M.D., *Instructor in Bacteriology and Immunology and Assistant Director of the Division of Communicable Diseases, Department of Public Health of Massachusetts.*

The students in the School of Public Health may be considered in three categories as regards their previous training in bacteriology.

(a) *Students who have had extensive expérience in bacteriology and who are familiar with the principles and standard methods.* The regularly scheduled courses in the School of Public Health are not designed for this group. However, several opportunities for advanced training are available. By arrangement with the Massachusetts Department of Public Health, students may study in the Wassermann Laboratory, in the Diagnostic Laboratory, and in the Biologic Laboratories. Courses in various aspects of sanitary bacteriology are given by the Harvard University Graduate School of Engineering. Suitably qualified students may wish to take courses in the Harvard Medical School, such as Bacteriology A (section for graduate students); Bacteriology 32, Immunity and Serology; Bacteriology 33b, Clinical Bacteriology; Bacteriology 34, Viruses. These courses are described in detail in the official register of the Harvard Medical School.

(b) *Students whose background in bacteriology is negligible.* In this group are those students whose previous instruction in bacteriology was received many years before their matriculation in the School of Public Health, and whose activities have not brought them into contact with the developments in bacteriology. Also in this group are the students whose previous instruction in bacteriology was incomplete or unsatisfactory for various reasons. This group is advised to take a basic course in bacteriology and immunology such as Bacteriology A, Harvard Medical School, or Sanitary Engineering 2a, b (Sanitary Bacteriology) given at the Graduate School of Engineering, or a similar course elsewhere.

Candidates for the degree of Master of Public Health who fall in this category are required to take a basic course in bacteriology before being granted their degrees.

(c) *Students who have had satisfactory instruction in bacteriology but who have not had extensive experience in the field.* Most of the candidates for the degree of Master of Public Health belong in this group. The regularly scheduled courses in bacteriology in the School of Public Health are designed primarily for these students.

Public Health Bacteriology 1c. Principles of Public Health Bacteriology and Immunology

Lectures and demonstrations. *Mondays, Tuesdays, Thursdays and Saturdays, 9-10, third period.* Dr. SNYDER, Dr. MURRAY and Dr. EDSALL.

Credit 2 units.

This course considers the pathogenic bacteria, viruses, rickettsiae, and fungi with emphasis on recent developments of importance in public health. The principles of bacteriology and immunology are discussed in relation to the problems of public health. The course is recommended particularly for students who may be engaged in activities related to the field of communicable diseases.

Prerequisites: Medical Bacteriology; Sanitary Engineering 1a, b.

Public Health Bacteriology 2d. Applied Immunology

Lectures and laboratory work. *Wednesdays, 2-5, fourth period.* Massachusetts Biologic Laboratories. Dr. EDSALL and associates.

Credit 1 unit.

The application of immunological theory to the prevention and treatment of disease, as evidenced in the manufacture of serums, vaccines, and related products, is developed by lectures, discussions and laboratory demonstrations. The content of the course is dependent upon the training and interests of students.

Public Health Bacteriology 3c, 3d. Laboratory Tests for Syphilis

Conferences and laboratory work. Time and credit to be arranged. Dr. HINTON.

A short course in theoretical and practical aspects of serologic tests for syphilis is open to selected students at the Wassermann Laboratory of the Massachusetts Department of Public Health. The relation of laboratory methods to epidemiologic studies and to programs of control receive special consideration.

This course is intended for students who desire advanced instruction in techniques of serologic tests and darkfield examinations.

Public Health Bacteriology 11d. Public Health Laboratory Procedures

Limited to 20 students who have completed course 1c. *Thursdays, 9-11, Fridays, 9-10, and Saturdays, 11-1, fourth period.* Drs. MURRAY, EDSALL, SNYDER, CHANG, HINTON and MACCREADY.

Credit 1.5 units.

This course demonstrates laboratory methods and techniques of importance in public health. The students perform a few standard bacteriologic pro-

cedures. Exercises include darkfield examinations, serologic tests for syphilis and other diseases, the isolation and identification of representative pathogenic agents, and the bacteriologic examination of milk, water, and food. The students are not expected to acquire ability to perform laboratory procedures expertly. Rather the course is designed to illustrate various public health laboratory procedures, with special reference to potentialities and shortcomings.

The course is recommended particularly for students whose activities in the field of public health are likely to involve them in various relationships with public health laboratories. The course does not offer technical training of the sort needed by persons who will be engaged primarily in laboratory work.

Public Health Bacteriology 12a, b, c, d

Advanced Laboratory Work in Applied Immunology. Mass. Biologic Laboratories. Time and credit to be arranged. Dr. EDSALL and associates.

Opportunities are offered to properly qualified students for study of and training in the manufacture of biologic products or for original work in problems related to these processes at times to be arranged individually.

Public Health Bacteriology 20. Research

Properly qualified students may do research in bacteriology by arrangement with the head of the Department.

Public Health Bacteriology 30. Field Training

Suitably qualified students, by arrangement with the head of the Department may spend the designated period of field training in observation of the operation of the three institutions of the Massachusetts Department of Public Health as indicated below. The purpose of this field training is to permit the students to become familiar with the organization and administration of the bacteriologic diagnostic laboratory, the serologic laboratory for the diagnosis of syphilis, and the biologic laboratories. The problems of these institutions and the techniques employed will be demonstrated to the students.

Jan. 31-Feb. 4	{	Diagnostic Laboratory
		Wassermann Laboratory
		Biologics Laboratory

Students may elect to visit any one or all of these institutions.

DEPARTMENT OF PUBLIC HEALTH PRACTICE

HUGH R. LEAVELL, S.B., M.D., Dr.P.H., *Professor of Public Health Practice and Head of the Department.*

C. WALTER CLARKE, A.B., A.M., M.B.Ch.B., *Clinical Professor of Public Health Practice.*

FRANZ GOLDMANN, M.D., *Associate Professor of Medical Care.*

VLADO A. GETTING, A.B., M.D., Dr.P.H., *Clinical Professor of Public Health Practice and Commissioner of Public Health, Department of Public Health of Massachusetts.*

HELEN L. ROBERTS, A.B., M.D., M.P.H., *Associate in Public Health Practice.*

FRANCES M. FRAZIER, S.B., R.N., M.P.H., *Instructor in Public Health Nursing.*

ALTON S. POPE, A.B., M.D., Dr.P.H., *Instructor in Public Health Practice and Deputy Commissioner, Department of Public Health of Massachusetts.*

ROY F. FEEMSTER, A.B., M.D., M.P.H., *Instructor in Public Health Practice and Director, Division of Communicable Diseases, Department of Public Health of Massachusetts.*

HERBERT L. LOMBARD, A.B., M.D., M.P.H., *Instructor in Public Health Practice and Director, Division of Cancer and Other Chronic Diseases, Department of Public Health of Massachusetts.*

NORBERT A. WILHELM, M.D., *Instructor in Public Health Practice and Director, Peter Bent Brigham Hospital.*

ERNEST M. MORRIS, A.B., M.D., M.P.H., *Instructor in Public Health Practice and Director of Public Health, City of Newton, Massachusetts.*

ROBERT E. ARCHIBALD, M.D., M.P.H., *Instructor in Public Health Practice and Director, Division of Local Health Administration, Department of Public Health of Massachusetts.*

ARTHUR E. BURKE, S.B., M.D., *Instructor in Public Health Practice and District Health Officer, Department of Public Health of Massachusetts.*

LOREN D. MOORE, M.D., *Instructor in Public Health Practice and First Assistant to the Commissioner, Department of Public Health of Massachusetts.*

ALFRED L. FRECHETTE, M.D., M.P.H., *Instructor in Public Health Practice and Health Officer, Town of Brookline, Massachusetts.*

THEODORE ROSENTHAL, S.B., M.D., *Instructor in Public Health Practice and Director, Bureau of Social Hygiene, New York City Department of Health.*

SIDNEY COBB, S.B., M.D., *Instructor in Public Health Practice and Director, Nashoba Associated Boards of Health.*

JAMES M. DUNNING, A.B., D.D.S., M.P.H., *Dean, Harvard School of Dental Medicine.*

STANLEY COBB, A.B., M.D., *Bullard Professor of Neuropathology.*

ERICH LINDEMANN, Ph.D., M.D., *Lecturer in Clinical Psychology.*

PAUL K. LOSCH, D.D.S., *Assistant Professor of Clinical Dentistry.*

SHIELDS WARREN, A.B., M.D., *Assistant Professor of Pathology.*

F. WILLIAM MARLOW, JR., S.B., M.D., *Associate in Medicine.*

Public Health Practice 1a. Principles of Public Health Practice

Lectures. *Wednesdays and Fridays, 11-1, first period.* Dr. LEAVELL and associates.

Credit 2 units.

The principles of administrative organization and procedure are now sufficiently well established to serve as a basis upon which public health practice can be founded. The complexity of modern communities makes it essential for workers in the health field to understand the organizational structure of government and the community in order to work effectively with other departments at various governmental levels and with voluntary agencies.

This course provides discussion of the basic principles of public administration, organization, personnel management, public health law, budgeting, community organization and health organization.

Public Health Practice 2b. Public Health Practice

Seminars, conferences and field observations. *Mondays and Wednesdays, 9-11, second period.* Dr. LEAVELL and associates.

Credit 2 units.

Discussions and some details of public health organization at the various governmental levels. The so-called basic public health activities are emphasized particularly, including vital statistics, communicable disease control, maternal and child care, sanitation, public health laboratory services, health education and adult health services.

Public Health Practice 3c. Problems in Public Health Practice

Seminars, *Mondays and Wednesdays, 10-12, third period.* Drs. LEAVELL, GETTING and FRECHETTE.

Credit 2 units.

The case method of presenting problems in the field of public health administration is employed, using situations from field experience to illustrate problems and to serve as basis for discussion of applied public health administration. Students are assigned problems to study and report upon to the class. Such problems include those encountered in the work of state and local health departments associated for field training purposes with the School of Public Health.

Public Health Practice 4d. Voluntary Health Agencies

Seminars, *Wednesdays, 11-1, fourth period.* Dr. ROBERTS.

Credit 1 unit.

The voluntary health agencies play a large and important part in the field of public health because of their diverse nature, objectives, methods of admin-

istration and fund raising. Examples of the various principal types of voluntary agencies are discussed in some detail. Representatives of the voluntary agencies at the national, state and local levels contribute to the discussions.

This course is designed to provide those who expect to be public health administrators with some knowledge of how voluntary health agencies, foundations and professional associations operate and also to give those who expect to work in voluntary health agencies some orientation in the field.

Public Health Practice 5a. Organization of Medical Care

Lectures and discussions. *Mondays and Wednesdays, 9-11, first period.* Dr. GOLDMANN.

Credit 2 units.

An orientation course on the development and present state of medical care programs organized under the auspices of public and voluntary agencies. Discussion of the resources in medical and related personnel, and in hospitals, clinics and custodial institutions; of the utilization of existing services and the cost of medical care; and of the basic methods of organizing and paying for professional and hospital services. Description of tax supported medical care programs administered by local, state and federal agencies and of voluntary pre-payment plans of various types.

Public Health Practice 6c, d. Administration of Medical Care Programs

Seminars, field observations and exercises. *Tuesdays and Thursdays, 10-12, third period; Fridays, 10-12, and Saturdays, 9-11, fourth period.* Dr. GOLDMANN.

Credit 4 units.

An advanced seminar enlarging on the basic subject matter presented in Public Health Practice 5a, Organization of Medical Care. Designed primarily for students who wish to specialize in medical care. Discussion of the basic principles and problems of sound administrative organization of medical care programs. Study of the administrative practices actually followed by public agencies in charge of tax supported services and by voluntary agencies administering prepayment plans for hospital care, physicians' service, or both. Discussion of the techniques of surveying and appraising medical care needs and medical care programs. Analysis of the experience gained in the operation of various types of tax supported and insurance plans. Visits to selected medical care facilities and to administrative agencies, public and voluntary. Supervised studies of typical organizations.

Prerequisite: Public Health Practice 5a.

Public Health Practice 7d. Hospital Organization and Community Relationships

Lectures and field exercises. *Mondays, 11-1, Tuesdays, 10-12, fourth period. Field trips to be arranged.* Dr. WILHELM. This course will not be given for less than ten students.

Credit 2 units.

This course is designed to give the health officer basic information on the organization and functions of the typical hospital and, especially, on its relationship to the various agencies engaged in health activities and to the community as a whole. No attempt is made to develop hospital administrators; therefore emphasis is on fundamental problems rather than on the details of hospital administration.

Prerequisite: Public Health Practice 5a.

Public Health Practice 8a. Control of Cancer

Lectures and discussions. *Fridays, 9-11, first period.* Dr. WARREN. This course will not be given for less than ten students.

Credit 1 unit.

Cancer control is discussed from the viewpoint of the administrator rather than the epidemiologist or the specialist. Authorities in the various aspects of the cancer control program are invited to discuss special phases of the problem.

Public Health Practice 9b. Psychosocial Problems

Lectures and seminars. *Fridays, 9-11, second period.* Dr. COBB and associates.

Credit 1 unit.

This course is concerned with the study of abnormal behavior resulting in social problems and with the mechanisms which produce abnormal mental reactions. Methods of handling these problems through community resources are discussed.

Public Health Practice 10b. Public Health History

Seminars. *Wednesdays, 11-12, second period.* Dr. LEAVELL and associates.

Credit .5 unit.

The growth of the modern health unit, particularly in the Anglo-Saxon countries is discussed. Cultural, social and economic forces which have influenced the movement are studied in relationship to the evolution of the science of public health.

Public Health Practice 11c. Control of Tuberculosis

Lectures and field exercises. *Mondays and Fridays, 2-4, third period.*

Credit 2 units.

Control measures applicable to public health practice are discussed. The approach is that of the administrator rather than the specialist, although specialists in various aspects of tuberculosis control will lead some of the discussions. Field trips include visits to hospitals, mass chest survey projects, tuberculosis clinics, etc.

Public Health Practice 12d. Venereal Disease Control

Lectures, demonstrations and discussions. *Mondays and Wednesdays, 9-11, Thursdays, 11-1, fourth period.* Dr. CLARKE.

Credit 3 units.

This course presents, first, the basic medical data regarding syphilis, gonorrhea, chancroid, granuloma inguinale and lymphogranuloma venereum as communicable diseases, and second, their epidemiology, prevention and administrative control. During the first part of the course the subject matter is presented by means of lectures, motion pictures, slides and clinical demonstrations. The second part is devoted to lectures and class discussions of practical problems involved in the public health control of venereal diseases.

Clinics

Clinical instruction in syphilis at the Peter Bent Brigham Hospital. *Wednesdays, 6-8 P.M., and Thursdays, 1-3 P.M.* Dr. MARLOW.

These clinics are available during the entire year to all public health students; those who are planning to do specialized public health work in this field are expected to spend considerable time in them and to participate in the work.

Credit units according to amount of work done.

Clinical instruction in gonorrhea at the Peter Bent Brigham Hospital. *Mondays through Saturdays, 8:30-11:30 A.M.*

These clinics, while especially designed for students whose major interest is the control of the venereal diseases, are also available to other students.

Credit units according to amount of work done.

Laboratory Tests for Syphilis. Dr. HINTON. See page 48.

Public Health Practice 13c, d. Health Education Problems

Seminars and demonstrations. *Saturdays, 11-1, third and fourth periods.*

Credit 2 units.

Discussion of the educational and psychological principles involved in health education and community organization. Projects demonstrating principal tech-

niques in health education through various media, such as printed matter, radio, newspapers, exhibits, etc.

Public Health Practice 14d. Conferences in Hospital Administration

Fourth period. Time and credit to be arranged. Dr. WILHELM. Limited to five students.

This course is designed for students who elect Public Health Practice 7d and for certain others who are interested in attending daily administrative conferences at the Peter Bent Brigham Hospital.

Public Health Practice 15c and 15d. Dental Public Health Practice

Conferences, seminars and field exercises. Time and credit to be arranged. Dr. DUNNING and associates.

Graduates in dentistry who are accepted as candidates for the degree of Master of Public Health are required to take the basic courses which are prescribed for that degree. They are assumed to have had adequate training and experience in all phases of clinical dentistry but as additional experience, opportunities are provided in the Forsyth Infirmary and in the Harvard School of Dental Medicine.

Opportunities for field work in public health dentistry are provided in the Massachusetts Department of Public Health and in the Health Department of the City of Newton.

Public Health Practice 16c, d. Public Health Nursing

Seminars. *Thursdays, 2-3, third period and Fridays, 9-10, fourth period.* Miss FRAZIER.

Credit 1 unit.

Public health nursing is discussed in relation to community needs and the total public health program. Emphasis is placed on administration of local nursing services with reference to the specific functions of nurses and to coordination of the activities of nurses in official and voluntary agencies.

Public Health Practice 17c. Mortality and Morbidity

Seminars. *Tuesdays, 2-4, third period.* Dr. GOLDMANN, Dr. DOERING.

Credit 1 unit.

This course is given jointly with the Department of Biostatistics (see Biostatistics 3c). It will consider the incidence of morbidity and mortality in the general population and will investigate methods of estimating the need for medical care.

Prerequisites: Public Health Practice 1a and 5a, Biostatistics 1a, b, or their equivalents.

Public Health Practice 18 c, d. Cancer Control Administration

Seminars and Field Work. Hours and credit to be arranged.

Discussion of advanced problems in the administration of cancer control programs of official and voluntary health agencies. Observation and field work in cancer detection clinics, cancer clinics, cancer hospitals and related activities.

Public Health Practice 19 c, d. Veterinary Public Health Practice

Seminars. Time and credit to be arranged. Dr. ———.

Discussion of advanced problems of veterinary public health practice, with particular reference to integration in the program of official and voluntary health agencies.

Public Health Practice 20. Research

Advanced students are offered the opportunity to undertake special studies in the practice of organized health services. The student must have completed Biostatistics 1a, b and Public Health Practice 1a and 5a before registering for this work.

*Field Work in Public Health Practice***Public Health Practice 30b and 30c**

Field Work in Local, District and State Health Departments. *Jan. 31-Feb. 5 and April 4-9.*

Credit 1 unit each.

Opportunity to spend a continuous period in a well operated local or district health department observing activities of the various subdivisions, work of the health officer and relationships with the community, with discussions and reports. Only a few students can be accommodated in any one department at a given time. Specific arrangements for this course must be made well in advance of the dates scheduled.

Public Health Practice 31b, c and d

Field Work — Medical Care Agencies. Time and credit to be arranged.

Planned visits to voluntary and official agencies concerned with provision of medical care to various segments of the population, discussion of observations and reports. Offered in conjunction with Public Health Practice 6c, d.

Public Health Practice 32d

Field Work — Venereal Disease Control. Time and credit to be arranged.

Field work in the Bureau of Social Hygiene, City of New York Department

of Health. Dr. CLARKE, with the assistance of officers of the New York City Department of Health, Bureau of Social Hygiene. Also one week field trip to state and city health departments under supervision of Dr. CLARKE.

Public Health Practice 33c, d. Public Health Nursing

Field Work. Hours and credit to be arranged.

Opportunity is given to physicians and nurses to observe and evaluate nursing services in a community. Students registering for Public Health Practice 33c, d must also register for Public Health Practice 16c, d.

DEPARTMENT OF SANITARY ENGINEERING

GORDON M. FAIR, S.B., S.M., *Abbot and James Lawrence Professor of Engineering, Gordon McKay Professor of Sanitary Engineering and Head of the Department.*

MELVILLE C. WHIPPLE, A.M. (hon.), *Associate Professor of Sanitary Chemistry.*

EDWARD W. MOORE, A.B., A.M., *Associate Professor of Sanitary Chemistry.*

HAROLD A. THOMAS, JR., S.B., S.M., S.D., *Associate Professor of Sanitary Engineering.*

J. CARRELL MORRIS, S.B., A.M., Ph.D., *Assistant Professor of Sanitary Chemistry.*

SHIH L. CHANG, M.D., Dr.P.H., *Assistant Professor of Sanitary Biology.*

Sanitary Engineering 1a, b. Principles of Sanitation

Lectures and demonstrations. *Tuesdays, Thursdays and Saturdays, 10-12, first period.* Professor FAIR and Assoc. Professor MOORE. *Tuesdays and Thursdays, 10-12, second period.* Professors DRINKER and YAGLOU, Assoc. Professor MOORE, Asst. Professors CHANG and SILVERMAN.

Credit 5 units.

This course is designed to cover the principles of sanitation that underlie the control of the environment by engineering means for the purpose of preserving and promoting the public health. The topics considered include: Water Supply—collection, purification, and distribution; Sewerage—collection, treatment, and disposal; Analysis of Water and Sewage—physical, chemical, and biological; Garbage and Refuse—collection and disposal; Housing; Rural Sanitation; and Sanitation of Schools, Camps, and Bathing Places.

In the second period, the topics include Food Sanitation—production, preservation, distribution, and preparation; Milk Sanitation; Shellfish Sanitation; Biological Control—insects and rodents; Ventilation—air supply, purification, conditioning; Noise—appraisal, control; Illumination—appraisal, control.

Sanitary Engineering 2a, b. Sanitary Bacteriology

Lectures and laboratory. *Summer term, first half, Mondays through Fridays, 1:30-5:30; first and second periods, Mondays, Wednesdays and Fridays, 2-5.* Asst. Professor CHANG.

Credit 6 units.

Morphology, physiology, cultivation, and identification of bacteria. Effect of physical, chemical and antibiotic agents on bacteria. Mechanism and dynamics of disinfection and bacteriostasis. Biochemical study of enteric bacteria. Immunity and antigen and antibody reactions. Bacteriology, bacteriological analysis, and sanitary control of air, dairy products, food, eating establishments, shellfish, swimming pools, and water. Microbiology of sewage and sewage treatment.

This is the same course as Engineering 411a.

Sanitary Engineering 2c, d. Advanced Sanitary Bacteriology

Conferences and laboratory. *Third and fourth periods.* Time and credit to be arranged. Asst. Professor CHANG.

Experimental studies of metabolism of nitrification and nitrogen-fixation bacteria. *Thiobacillus*; *Zooglea ramigera*; and protozoa. Studies of oxygen utilization in activated sludge process under various conditions. Bacteriophage.

This is the same course as Engineering 411b.

Sanitary Engineering 3c, d. Sanitary Parasitology

Lectures and laboratory. *Third and fourth periods, Mondays, Wednesdays and Fridays at 9, and Fridays, 2-5.* Asst. Professor CHANG.

Credit 4.5 units.

Life cycle and ecology of animal parasites of public health significance and medical entomology, with special emphasis on environmental control.

This is the same course as Engineering 413b.

The following courses of instruction offered in the Graduate School of Engineering are open to properly qualified students:

Engineering 400a. Water Supply, Sewerage, and Waste Disposal. Professor FAIR.

Engineering 400b. Water and Sewage Treatment Works. Professor FAIR.

Engineering 410a. Examination of Water and Sewage. Associate Professor WHIPPLE.

Engineering 412a, 412b and 414a. Engineering Chemistry. Asst. Professor MORRIS.

- Engineering 430b. Theory of Water and Sewage Treatment. Associate Professor MOORE.
- Engineering 431b. Unit Processes in Water and Sewage Treatment. Associate Professor WHIPPLE.
- Engineering 432a. Industrial Wastes and Municipal Refuse. Associate Professor MOORE.
- Engineering 433b. Stream Sanitation. Associate Professors MOORE and THOMAS, and Asst. Professor CHANG.
- Engineering 434a. Industrial Water Supplies. Associate Professor MOORE.

STUDENTS 1947-48

CANDIDATES FOR THE DEGREE OF DOCTOR OF PUBLIC HEALTH

Abhayaratne, Osmond E. R., L.M.S., L.R.C.P.	
& S., L.R.F.P. & S., D.P.H., M.P.H.	Colombo, Ceylon
Banton, Huston J., S.B., M.D., M.P.H.	West Roxbury, Mass.
Bill, Audrey A., A.B., M.D., M.P.H.	Wayland, Mass.
Gibson, Thomas E., S.B., M.D., M.P.H.	Chester, Pa.
Lockwood, Elizabeth A., S.B., A.M., M.P.H.	Ithaca, N. Y.
Wilkerson, Hugh L. C., S.B., M.D., M.P.H.	East Milton, Mass.

CANDIDATES FOR THE DEGREE OF MASTER OF PUBLIC HEALTH

Aiken, Robert B., Ph.B., S.M., M.D.	Burlington, Vt.
Allen, Theodore E., A.B., M.D.	Cambridge, Mass.
Blum, Henrik L., S.B., M.D.	San Francisco, Calif.
Boland, Percy, M.D.	Santa Cruz, Bolivia
Bowditch, Sarah H., S.B., M.D.	Milton, Mass.
Brine, Constance L., S.B., in Ed.	Brighton, Mass.
Centeno, Pilar A., M.D.	Manila, P. I.
Chen, Pang-Hsien, S.B., M.D.	Shanghai, China
Chen, Shih-Chang, M.D.	Soochow, China
Chetty, Chelvaraya G., B.A., M.B.B.S., D.P.H.	Mysore, India
Chu, Pao Tien, S.B.	Shanghai, China
Coler, H. Robert, M.D.	New York, N. Y.
Crawford, John L., S.B., M.D.	San Francisco, Calif.
Cushing, Gertrude A., S.B.	Bethesda, Md.
de la Paz, Alicia, M.D.	Manila, P. I.
Díaz-Coller, Carlos, M.D.	Mexico City, Mexico
Domke, Herbert R., S.B., M.D.	Chicago, Ill.
Fakir, Mouhiddine T., M.D.	Damascus, Syria
Farris, William B., S.B., M.D.	Gallatin, Tenn.
Florendo, Federico N., Jr., M.D.	San Fernando, P. I.
Häkkinen, Inkeri, M.A.	Ruovesi, Finland
Johns, Clara R., A.B., M.D.	Chicago, Ill.
Johnson, Dorothy E., S.B.	Nashville, Tenn.
Karefa-Smart, John A. M., B.A., S.B., M.D.	Sierra Leone, W. Africa
Kurland, Leonard T., A.B., M.D.	Baltimore, Md.
Lichty, Dwight L., M.D.V.	Woodstock, Ill.
Lingaraju, Bangalore N., M.B., B.S., D.P.H.	Bangalore City, India
Luoto, Lauri, M.D.V.	Gardner, Mass.

CANDIDATES FOR THE DEGREE OF MASTER OF PUBLIC HEALTH (*continued*)

Lyman, Edwin D., A.B., M.D.	Lincoln, Nebr.
Marcus, Florence L., S.B., M.D.	Pittsburgh, Pa.
Marshall, Irvine H., S.B., M.D.	Corapolis, Pa.
Mayes, W. Fred, S.B., M.D.	Topeka, Kans.
McClaskey, Laurence S., D.D.S.	Sacramento, Calif.
McKenna, Romayne F., B.S.M., M.D.	Fall River, Mass.
Menges, Robert W., M.D.V.	Cleveland, Ohio
Morehead, Mildred A., M.D.	New York, N. Y.
Nelson, Robert K., M.D.V.	Manhattan, Kans.
Pareti, Marie L., S.B., M.D.	New Orleans, La.
Pascual, Conrado R., M.D.	Manila, P. I.
Peatfield, Norman E., A.B., M.D.	South Hamilton, Mass.
Potter, Laurence A., A.B., M.D.	La Crescenta, Calif.
Primeau, Bertrand, A.B., M.D.	Montreal, Canada
Rau, Sabnavis S., B.Sc., M.B., B.S., D.P.H.	Bangalore City, India
Recarte, Pablo P., M.D.	Montevideo, Uruguay
Reyes, Arturo C., M.D.	Manila, P. I.
Ryder, Brooks, A.B., M.D.	Boston, Mass.
Shoib, Mohamed O., M.B.B.CH.	Cairo, Egypt
Togasaki, Yoshiye, A.B., M.D.	San Francisco, Calif.
Ursin, Oscar E., A.B., M.D.	Wittenberg, Wis.
Walsh, Francis X., A.B., M.D.	Dorchester, Mass.
Weinerman, Edwin R., A.B., M.D.	Mt. Rainier, Md.
Wheeler, Gordon B., S.B., M.D.	Brighton, Mass.
Yerby, Alonzo S., S.B., M.D.	Brooklyn, N. Y.
Zimmermann, Else H., S.B.	Douglaston, N. Y.

CANDIDATES FOR THE DEGREE OF DOCTOR OF SCIENCE IN HYGIENE

Charalampous, Frixos C., M.D.	Ktima-Papho, Cyprus
Woodhill, Joan M., S.B., S.M.	Sydney, Australia

CANDIDATES FOR THE DEGREE OF MASTER OF SCIENCE IN HYGIENE

Darling, Dorothy B., S.B.	Arlington, Va.
Lavin, Sam, S.B.	Ogden, Utah
Pauls, Frank P., A.B.	Anchorage, Alaska

FULL-TIME SPECIAL STUDENTS

Alvarez, Jacobo A., M.D.	Ciudad Trujillo, Dom. Rep.
Antezana, José, M.D.	La Paz, Bolivia
Carlín, Cesar E., M.D.	Lima, Peru

FULL-TIME SPECIAL STUDENTS (*continued*)

Dulaney, Malcolm K., A.B.	Mart, Texas
Gumiel, Alberto, M.D.	La Paz, Bolivia
Herford, Martin E. M., M.B., Ch.B., D.P.H.	London, England
Hsueh, Pang-Chi, M.D.	Shanghai, China
Ledesma, Bolívar P., M.D.	Montevideo, Uruguay
Milunić, Josip, M.D.	Belgrade, Yugoslavia
Nash, Peter H., A.B., M.B.B.Chir., A.M., D.P.H.	Sidcup, Kent, England
Pillai, Sankara S., B.A., M.B., B.S., D.P.H., D.C.P.	Trivandrum, South India
Rodríguez, Hector J., Dr. Pharm.	Santiago, Dom. Rep.
Ryang, Soon T., M.D.	Kyonggi-do, Korea
Sarma, Padubidri S., B.Sc., M.Sc., Ph.D.	Coonoor, South India
Szczygiel, Aleksander M.D.	Warsaw, Poland
Tuli, Ram L., M.B.B.S.K.E., D.T.M., D.P.H.	Nagpur, India
Wang, Cheng-Fa, M.B., Ch.B.	Nanking, China

PART-TIME SPECIAL STUDENTS

Baker, Mary C., A.B.	Boston, Mass.
Benson, Robert G.	Boston, Mass.
Berresford, Kathleen K., S.B.	Ithaca, N. Y.
Bloom, Etta, A.B.	Roxbury, Mass.
Brooks, Ethel G., S.B.	North Grafton, Mass.
Buckley, William R., S.B., M.D.	Medford, Mass.
Carrington, Norma E.	Cambridge, Mass.
Cobb, Sidney, S.B., M.D.	Fort Devens, Mass.
Conde, Manuel, M.D.	Wellesley, Mass.
Courtney, Julia M., S.B.	Shrewsbury, Mass.
Deaver, Mary B., S.B.	Tampa, Fla.
Ditto, Beatrice H., S.B.	Boston, Mass.
Donohue, Eleanor B., A.B.	Worcester, Mass.
Duggan, George L., S.B., M.D.	Lowell, Mass.
Glenn, Anne B., A.B.	Eufaula, Ala.
Holzer, Hedwig H., M.D.	Dorchester, Mass.
Horn, Beverly W., S.B. in Ed.	Brighton, Mass.
Höweler, Johanna, S.B.	Amsterdam, Holland
Klish, John E., A.B.	Brookline, Mass.
Lief, Selma Z. T., S.B.	Roxbury, Mass.
Lombard, Maude N., S.B.	Everett, Mass.
McCarroll, Ernest M., A.B., M.D., M.S.P.H.	Newark, N. J.

PART-TIME SPECIAL STUDENTS (*continued*)

McHugh, William P., M.D.	Cambridge, Mass.
Mackey, Thomas F.	Somerville, Mass.
MacKinnon, Catherine F., A.B., S.M.	Boulder, Mont.
Moore, Loren D., M.D.	Wellesley Hills, Mass.
Mullin, Gerard B.	Quincy, Mass.
Murphy, Rita M., S.B.	Providence, R. I.
Nichols, Margaret J., S.B., A.M.	San Diego, Calif.
Pearson, Carmen, S.B.	Jackson, Miss.
Pennell, Walter J., A.B., M.D.	Wakefield, Mass.
Perozzi, Lucile A., A.B., A.M.	Ashland, Oregon
Seraichekas, Helen R., S.B.	Cranston, R. I.
Sherwin, Herbert, S.B., M.D.	Cambridge, Mass.
Spencer, Mary E., S.B., A.M., Ph.D.	Malden, Mass.
True, Marilyn P., S.B.	Augusta, Maine
Webb, Vonda A., S.B.	Clinton, Miss.
Weisz, Edith, Dr. Chem.	Turin, Italy
Wetterlow, Leslie H., S.B.	Winchester, Mass.
Wilson, Doris, B.Sc.	Brookline, Mass.
Wyman, Louise, S.B.	Boston, Mass.

DEGREES

On March 1, 1948, the following Degrees were conferred:

MASTER OF PUBLIC HEALTH

- Constance Louise Brine, S.B. in Ed. (*Framingham State Teachers Coll.*) 1941.
 Mary Lee Brown, S.B. (*Columbia Univ.*) 1938.
 Max Joseph Mackler, Phm.D. (*Massachusetts Coll. of Pharmacy*) 1913, Ph.C. (*ibid.*) 1914.

On June 10, 1948, the following Degrees were conferred:

DOCTOR OF PUBLIC HEALTH

- Elizabeth Anne Lockwood, S.B. (*Wayne Univ.*) 1932, A.M. (*Cornell Univ.*) 1938, M.P.H. (*Harvard Univ.*) 1946.
Thesis: Nutrition Education in the Elementary Schools.
Special Field: Nutrition Education.

MASTER OF PUBLIC HEALTH, *Magna cum Laude*

- Edwin Richard Weinerman, A.B. (*Yale Univ.*) 1938, M.D. (*Georgetown Univ.*) 1942.

MASTER OF PUBLIC HEALTH, *cum Laude*

- Henrik Leo Blum, S.B. (*Univ. of California*) 1937, M.D. (*ibid.*) 1942.
 Clara Ritchie Johns, A.B. (*Rockford Coll.*) 1937, M.D. (*Univ. of Chicago*) 1941.
 Leonard Terry Kurland, A.B. (*Johns Hopkins Univ.*) 1942, M.D. (*Univ. of Maryland*) 1945.
 Oscar Elliott Ursin, A.B. (*St. Olaf Coll.*) 1932, M.D. (*Washington Univ.*) 1936.

MASTER OF PUBLIC HEALTH

- Robert Bascom Aiken, Ph.B. (*Univ. of Vermont*) 1931, S.M. (*ibid.*) 1933, M.D. (*ibid.*) 1937.
 Theodore Edwin Allen, A.B. (*Williams Coll.*) 1936, M.D. (*Yale Univ.*) 1940.
 Percy Boland, M.D. (*Univ. of La Plata, Argentina*) 1940.
 Sarah Higginson Bowditch, S.B. (*Johns Hopkins Univ.*) 1930, M.D. (*ibid.*) 1935.
 Pilar Aquino Centeno, M.D. (*Univ. of the Philippines*) 1939.
 Pang-Hsien Chen, S.B. (*St. John's Univ., Shanghai*) 1935, M.D. (*ibid.*) 1938.
 Shih-Chang Chen, M.D. (*St. John's Univ., Shanghai*) 1937.
 Chelvaraya Gopalraj Chetty, B.A. (*Univ. of Mysore, India*) 1928, M.B.B.S. (*ibid.*) 1935, D.P.H. (*All India Inst. of Hygiene and Public Health*) 1941.
 Pao Tien Chu, S.B. (*Yenching Univ.*) 1938.
 H. Robert Coler, M.D. (*Univ. of Berlin*) 1924.
 John LeMoin Crawford, S.B. (*Indiana Univ.*) 1932, M.D. (*ibid.*) 1932.
 Alicia de la Paz, M.D. (*Univ. of the Philippines*) 1942.
 Carlos Díaz-Collier, M.D. (*Escuela Médico Militar*) 1945.
 Herbert Reuben Domke, S.B. (*Univ. of Chicago*) 1939, M.D. (*ibid.*) 1942.
 Mouhiddine Tahsin Fakir, M.D. (*Syrian Univ.*) 1938.
 William Barrett Farris, S.B. (*Carson Newman Coll.*) 1928, M.D. (*Vanderbilt Univ.*) 1933.
 Federico Nera Florendo, M.D. (*Univ. of the Philippines*) 1941.
 Inkeri Häkkinen, M.A. (*Univ. of Helsinki*) 1947.
 Dorothy Eloise Johnson, S.B. (*Vanderbilt Univ.*) 1942.
 John Albert Musselman Karefa-Smart, B.A. (*Univ. of Durham, England*) 1937, S.B. (*Otterbein Coll.*) 1940, M.D. (*McGill Univ.*) 1944.
 Dwight Lee Lichty, M.D.V. (*Texas Agricultural and Mechanical Coll.*) 1944.
 Bangalore Nagappa Lingaraju, M.B., B.S. (*Univ. of Mysore, India*) 1941, D.P.H. (*All India Inst. of Hygiene and Public Health*) 1945.
 Lauri Luoto, M.D.V. (*Michigan State Coll.*) 1943.
 Edwin Day Lyman, A.B. (*Univ. of Nebraska*) 1941, M.D. (*ibid.*) 1944.
 Florence Lillian Marcus, S.B. (*Univ. of Pittsburgh*) 1927, M.D. (*ibid.*) 1929.

MASTER OF PUBLIC HEALTH (*continued*)

- Irvine Hartford Marshall, S.B. (*Univ. of Pittsburgh*) 1929, M.D. (*Western Reserve Univ.*) 1935.
- William Fred Mayes, S.B. (*Univ. of Kansas*) 1936, M.D. (*ibid.*) 1938.
- Laurence Samuel McClaskey, D.D.S. (*Coll. of Physicians & Surgeons, San Francisco*) 1935.
- Romayne Flaherty McKenna, B.S.M. (*Creighton Medical Coll.*) 1925, M.D. (*ibid.*) 1927.
- Robert William Menges, M.D.V. (*Ohio State Univ.*) 1941.
- Mildred Ada Morehead, M.D. (*Columbia Univ.*) 1943.
- Robert Kenneth Nelson, M.D.V. (*Kansas State Coll.*) 1943.
- Marie Louise Pareti, S.B. (*Tulane Univ.*) 1929, M.D. (*ibid.*) 1933.
- Conrado Reyes Pascual, M.D. (*Univ. of the Philippines*) 1936.
- Norman Everett Peatfield, A.B. (*Duke Univ.*) 1931, M.D. (*Tufts Coll.*) 1936.
- Laurence Addison Potter, A.B. (*Univ. of California*) 1935, M.D. (*ibid.*) 1939.
- Bertrand Primeau, A.B. (*St. Mary's Coll., Montreal*) 1927, M.D. (*Univ. of Montreal*) 1933.
- Sabnavis Seshagiri Rau, B.Sc. (*Univ. of Mysore, India*) 1923, M.B., B.S. (*Univ. of Madras, India*) 1928, D.P.H. (*All India Inst. of Hygiene and Public Health*) 1934.
- Pablo Pascasio Recarte, M.D. (*Univ. of Montevideo*) 1942.
- Arturo Cruz Reyes, M.D. (*Univ. of the Philippines*) 1940.
- Brooks Ryder, A.B. 1940, M.D. (*Tufts Coll.*) 1943.
- Mohamed Osman Shoib, M.B.B.CH. (*Fouad I Univ., Cairo*) 1946.
- Yoshiye Togasaki, A.B. (*Univ. of California*) 1929, M.D. (*Johns Hopkins Univ.*) 1935.
- Francis Xavier Walsh, A.B. (*Boston Coll.*) 1933, M.D. (*Tufts Coll.*) 1937.
- Gordon Bartlett Wheeler, S.B. (*Boston Univ.*) 1943, M.D. (*ibid.*) 1945.
- Alonzo Smythe Yerby, S.B. (*Univ. of Chicago*) 1941, M.D. (*Meharry Medical Coll.*) 1946.

MASTER OF SCIENCE IN HYGIENE

In the Field of Nutrition

- Dorothy Brooks Darling, S.B. (*Univ. of Michigan*) 1942.

SCHEDULE OF COURSES OFFERED
IN 1947-48

Fall Term -- First Period September 27 - November 20, 1948

Saturday

Friday

Thursday

Wednesday

Tuesday

Monday

9						
10						
11						
12						
1						

2						
3						
4						
5						

Monday Tuesday Wednesday Thursday Friday Saturday

9	PUBLIC HEALTH PRACTICE 2b		NUTRITION 2b		PUBLIC HEALTH PRACTICE 9b		NUTRITION 2b		EPIDEMIOLOGY 5b	
10	MATERIAL & CHILD HEALTH 5b AND BIOSTATIST. 3b		SANITARY ENGINEERING 1a, b		PUBLIC HEALTH PRACTICE 2b		SANITARY ENGINEERING 1a, b		MATERIAL & CHILD HEALTH 1a, b	
11			PUBLIC HEALTH PRACTICE 10b		PUBLIC HEALTH PRACTICE 2b					
12	EPIDEMIOLOGY 1b		MATERIAL & PHYSIOLOGY 1a, b		EPIDEMIOLOGY 1b (LAST 4 WEEKS)		MATERIAL & CHILD H. 1a, b		MATERIAL AND CHILD HEALTH 4a, b	
1										
2	BIOSTATISTICS 1a, b		INDUSTRIAL HYGIENE 2a, b		BIOSTATISTICS 1a, b		INDUSTRIAL HYGIENE 2a, b		MATERNAL & CHILD HEALTH 2a, b	
3										
4									NUTRITION 4b	
5										

Spring Term -- Third Period

February 7 - April 2, 1949

Monday

Tuesday

Wednesday

Thursday

Friday

Saturday

9	PUBLIC HEALTH BACTERIOLOGY 1c		PUBLIC HEALTH BACTERIOLOGY 1c		PUBLIC HEALTH BACTERIOLOGY 1c		EPIDEMIOLOGY 4c		EPIDEMIOLOGY 4c		PUB. HEALTH BACT. 1c		EPI- DEMOLOGY 5c	
10	EPI- DEMOLOGY 2c	PUBLIC HEALTH PRACTICE 3c	BIO- STAT. 2c,d	PUBLIC HEALTH PRACT. 6c,d	BIO- STAT. 2c,d	PUBLIC HEALTH PRACT. 6c,d	BIO- STAT. 2c,d	PUBLIC HEALTH PRACT. 6c,d	PUBLIC HEALTH PRACT. 6c,d	EPI- DEMOLOGY 2c	MAT. & CHILD HEALTH 8c		PUBLIC HEALTH PRACTICE 13c,d	
11														
12			PHYSIOLOGY 2c,d		PHYSIOLOGY 2c,d									

1:30

2	INDUST. HYGIENE 1c,d		INDUST. HYGIENE 2c,d		INDUST. HYGIENE 1c,d (FIELD VISITS)		IND. HYG. 1c,d		IND. HYG. 1c,d		EPI- DEMOLOGY 4c	
3	INDUST. HYGIENE 1c,d	NUTRIT. 3c	INDUST. HYGIENE 2c,d	EPI- DEMOLOGY 6c	INDUST. HYGIENE 1c,d (FIELD VISITS)	INDUST. HYGIENE 2c,d	INDUST. HYGIENE 1c,d	IND. HYG. 1c,d	IND. HYG. 1c,d	NUTR. 3c	NUTRITION 4c	EPI- DEMOLOGY 4c
4		PUBLIC HEALTH PRACT. 11c		PUBLIC HEALTH PR. 17c								

3:30

Monday

PUBLIC HEALTH PRACTICE 12d
PUBLIC HEALTH PRACTICE 7d

Tuesday

MATERNAL AND CHILD HEALTH 3d	
BIO- STATISTICS 2c,d	PUBLIC HEALTH PRACTICE 7d
	PHYSIOLOGY 2c,d

Wednesday

PUBLIC HEALTH PRACTICE 12d	
PUBLIC HEALTH PRACTICE 4d	EPI- DEMI- OLOGY 7d

Thursday

PUBLIC HEALTH BACTERI- OLOGY 11d	MATERNAL & CHILD HEALTH 9d
PUBLIC HEALTH PRACTICE 12d	PHYSIOLOGY 2c,d

Friday

PUB. HEALTH BACT'Y 11d	PUB. HEALTH PRACT. 16c,d
BIO- STATISTICS 2c,d	PUBLIC HEALTH PRACTICE 6c,d

Saturday

PUBLIC HEALTH PRACTICE 6c,d	EPI- DEMOLOGY 5d
PUBLIC HEALTH BACTERI- OLOGY 11d	PUBLIC HEALTH PRACTICE 13c,d

2

INDUST. HYGIENE 1c,d (*)	NUTRIT. 3d	BIOSTAT. 4d AND MATER.& CHILD H. 10d
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(*) REPLACED BY

INDUSTRIAL
HYGIENE 3d
IN LAST MONTH

INDUST. HYGIENE 2c,d	EPI- DEMI- OLOGY 3d	MATERN. & CHILD HEALTH 9d
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INDUSTRIAL HYGIENE 1c,d (FIELD VISITS) (*)	PUBLIC HEALTH BACTERI- OLOGY 2d
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INDUST. HYGIENE 2c,d	EPI- DEMI- OLOGY 3d	MATERN. & CHILD HEALTH 9d
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INDUST. HYGIENE 1c,d (*)	NUTRIT. 3d	BIO- STAT. 5d
NUTRITION 4d		

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KEY TO AERIAL VIEW

- I School of Public Health, 55 Shattuck Street
 - Administration, Departments of Biostatistics, Industrial Hygiene, Maternal and Child Health, Physiology and Public Health Practice
- A Administration Building, Medical School
 - First Floor, Student Health Office
 - Second Floor, Library
- B, C, D, E Laboratories and Classrooms, Medical School
- F Vanderbilt Hall
- II Peter Bent Brigham Hospital
- III and V Children's Hospital
- IV Lying-In Hospital
- VI School of Public Health, Huntington Building, 695 Huntington Avenue, Department of Epidemiology, Nutrition and Public Health Bacteriology

